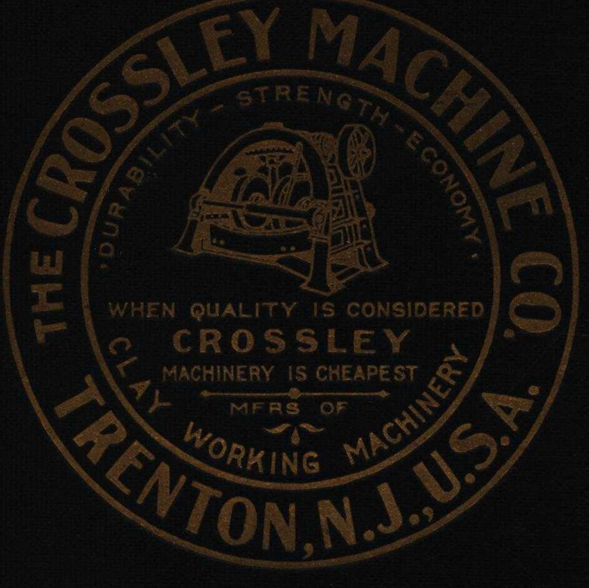

THE CROSSLEY MACHINE CO.
TRENTON, N.J., U.S.A.

"DURABILITY – STRENGTH – ECONOMY."

WHEN QUALITY IS CONSIDERED
CROSSLEY
MACHINERY IS CHEAPEST

MFRS OF
CLAY WORKING MACHINERY

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CROSSLEY MACHINERY

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THE CROSSLEY MACHINE CO.

All of the machines in this catalogue, with few exceptions, are protected by U. S. and Foreign Patents, and we will go to the full extent of law to protect our rights.

ESTABLISHED 1879 INCORPORATED 1896

The
Crossley Machine Co.
(Incorporated)

MANUFACTURERS OF

CLAY WORKING MACHINERY

Pottery : Electric Porcelain
Tile Making : Clay Washing
MACHINERY

MACHINERY for Grinding, Mixing, Washing and Forming Clay, Flint, Spar, Plumbago, Refractory Substances and Materials of like nature.

We are Engineers to the Clay Worker

MAIN OFFICE AND WORKS:
TRENTON, NEW JERSEY, U. S. A.

TERMS

Our terms are cash in thirty days, unless by special agreement.

Prices given for immediate acceptance, and subject to change without notice.

Time of delivery is always subject to detentions, over which we have no control.

We are not responsible for condition of goods after shipment. Delivery in good order to railroad or steamship company is considered as delivery to purchaser.

Unless otherwise specified, delivery is F. O. B. Trenton, N. J.

Boxing and cartage, when necessary, will be added to bill at cost price.

We reserve the privilege of altering details of machines illustrated when our experience deems it necessary.

All quotations, contracts and sales are made without liability on our part for delays arising from strikes, accidents or other causes beyond our control.

Owing to the fact that different kinds of materials require different methods for working, and that we are constantly making changes in the way of improvements in our machinery, we find it impossible to give accurate data regarding the various machines illustrated in this catalogue; we would, therefore, recommend that our customers, in ordering machinery, would ask us for information as required.

Introduction

In the following pages we have illustrated a few of our machines of most recent design. In addition to those shown, we build a great number of others, and we shall be pleased to furnish photographs or prints for any requirement upon request.

We make a special feature of designing and constructing machines to suit any particular work that our customers may desire.

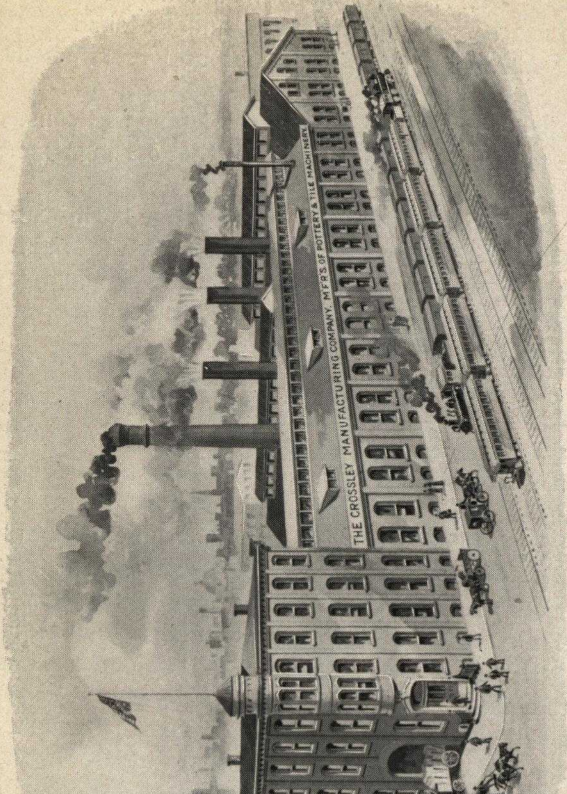
Our works, shown on the following page of this catalogue, are situated in Trenton, N. J., U. S. A , on the main line of the New York Division of the Pennsylvania Railroad.

We shall be pleased to quote upon any of our standard machines or upon special machinery.

In presenting this catalogue, descriptive of **CLAY WORKING MACHINERY**, of which we make an exclusive specialty, we wish to call your attention to the many improvements which have been made, also the several different styles and sizes of machinery added to our line since our last issue. We guarantee all the machines herein described as represented, and to substantiate what we say, we refer you to our numerous satisfied customers. We do not claim perfection, neither have we been able to find any honest manufacturer that does. We simply say that our machinery is second to none, and have a place in the front rank in our line. Each and every machine is carefully tested before it leaves our works. We would also state that the majority of the machines in this catalogue are protected by patents, and we therefore warn imitators. Parts of any machine can be furnished promptly.

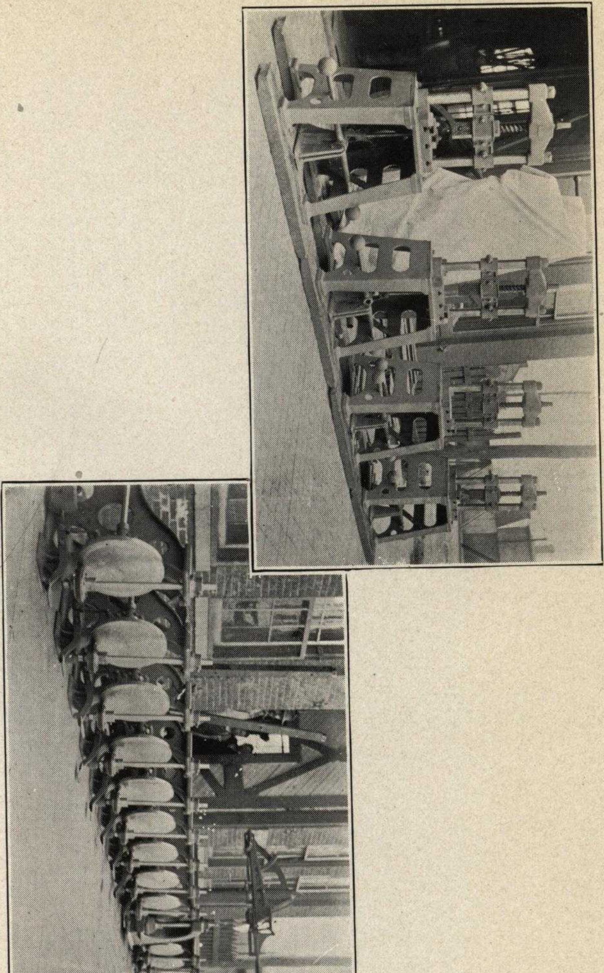
PRICES, WEIGHTS AND FULL SPECIFICATIONS

Will be promptly furnished to intending purchasers, together with data on anything in our line not found in this book.


THE CROSSLEY MANUFACTURING COMPANY. MFR'S OF POTTERY & TILE MACHINERY.

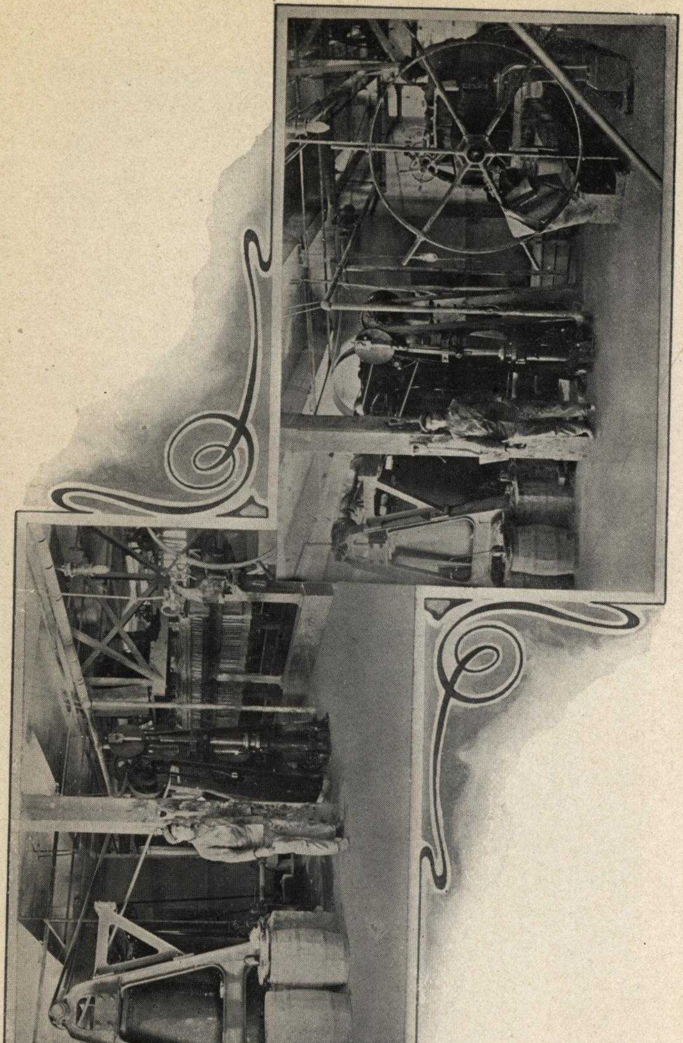
MEMBER THE NATIONAL ASSOCIATION OF MANUFACTURERS

Complete Equipments—"Crossley Process"

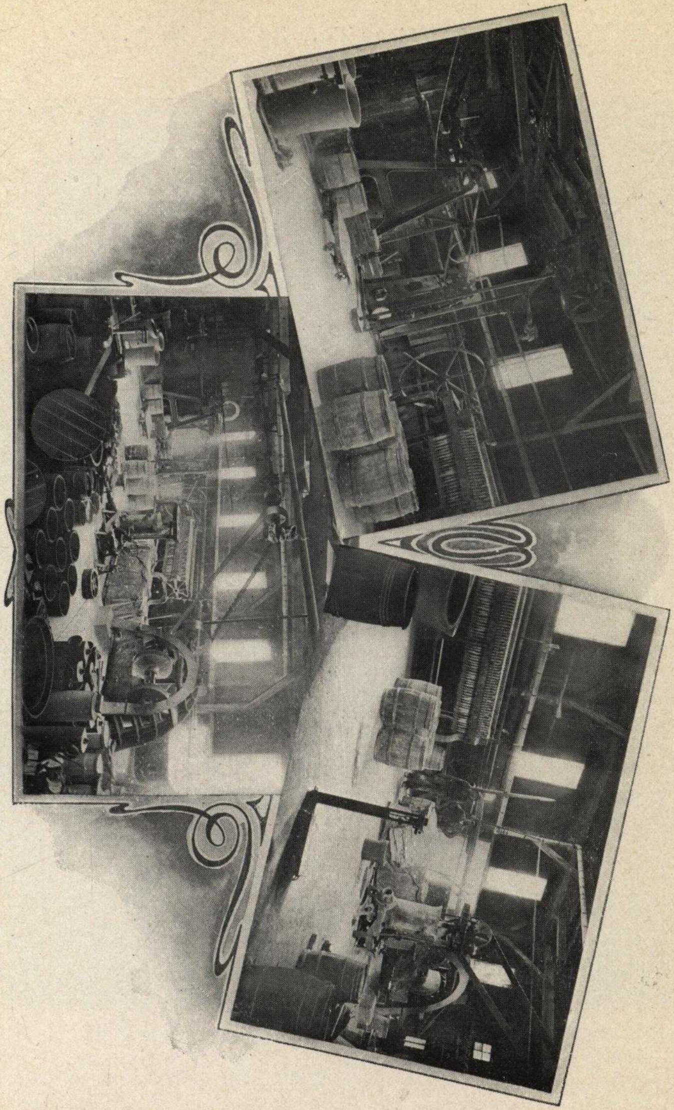


We equip Clay Working Plants complete ready for operation

CLAY MIXING DEPARTMENT
of Conkling-Armstrong Terra Cotta Co., Phila., Pa.

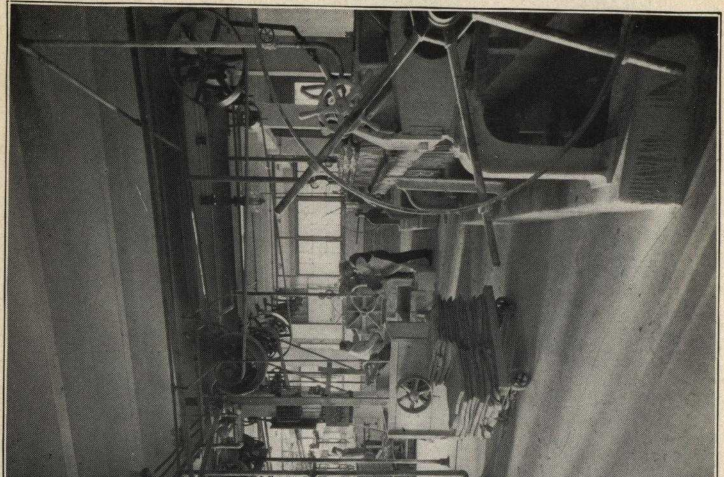


CLAY DEPARTMENT
of The General Chemical Co., Camden, N. J.



SLIP-HOUSE

Buffalo Pottery Co., Buffalo, N. Y.



Clay Washing and Refining Plants

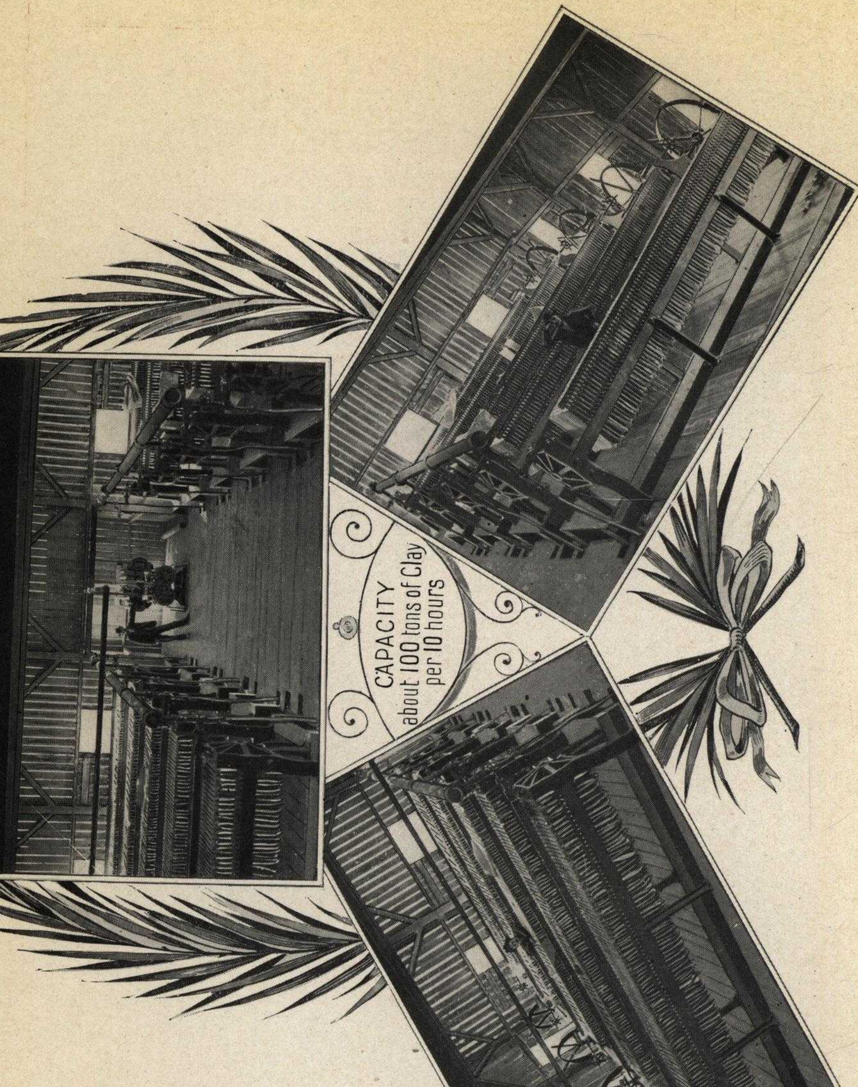
In preparing clay for the market, the process is altogether dependent upon the nature of the clay and the impurities to be extracted. It is, therefore, necessary to find some means for extracting these impurities, and it is for this purpose that we have made a special study of this branch of the clay industry, and we feel quite capable of tackling any problem along this line.

We are now manufacturing a line of machinery that we are sure will meet the requirements of the clay miner.

We have equipped clay washing plants all over the country, and make a specialty of contracting for the whole plant complete, ready for operation.

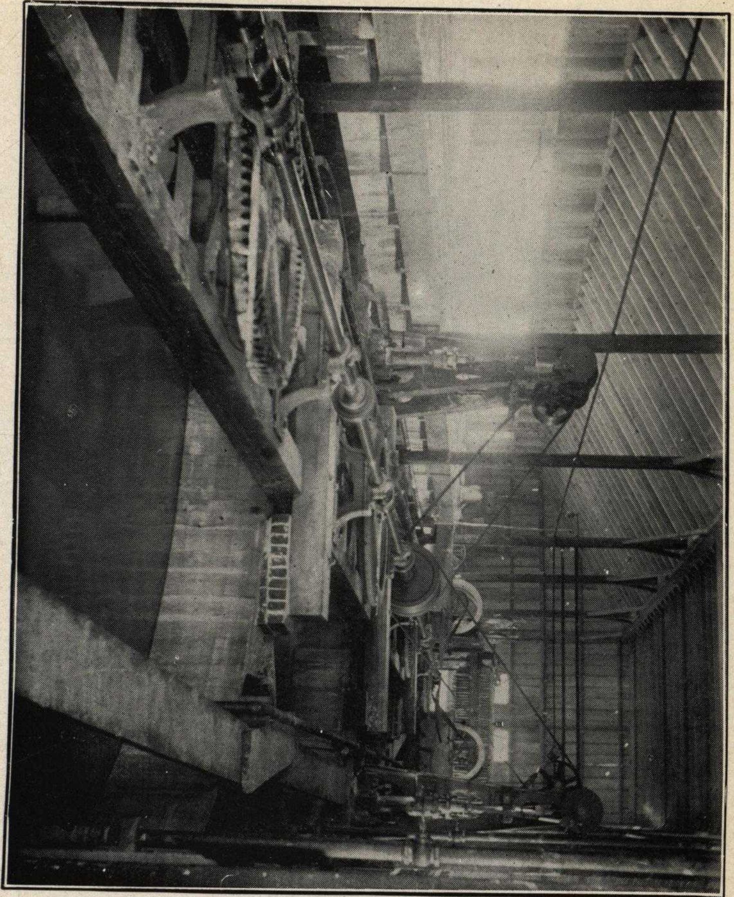
At our factory we have a complete laboratory and testing department for determining the value of a clay, and the necessary process through which it must pass to be marketable. We shall be pleased, therefore, to give expert opinion upon the values of any sample of clay which our customers may submit. We can also make a chemical analysis of a clay at a reasonable rate.

Estimates and illustrations of clay washing plants will be furnished upon application.



CAPACITY
about 100 tons of Clay
per 10 hours

CLAY WASHING PLANT
at North East, Md.



A Brief Description of Nos. 1 and 2 Mixing and Washing Outfit

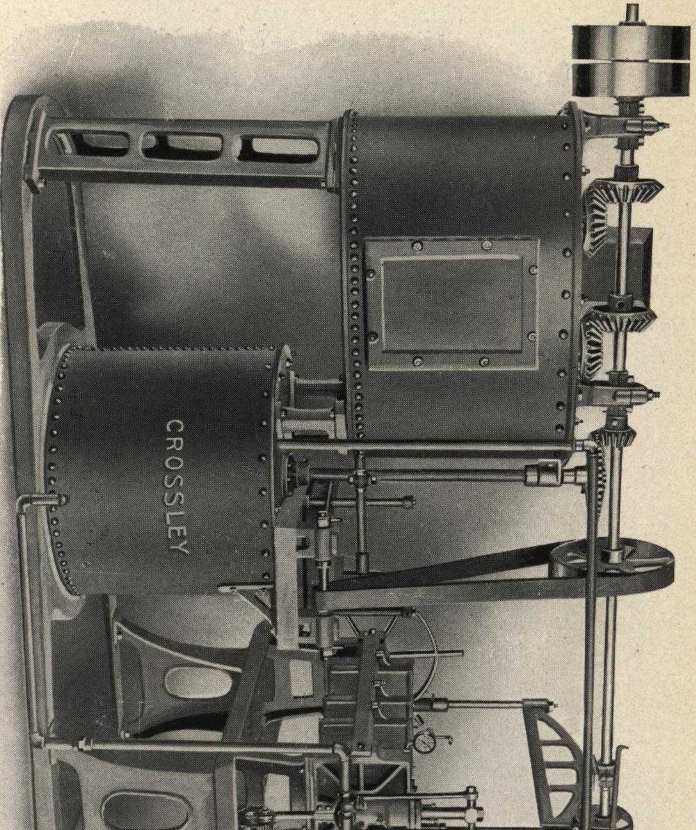
The cut on opposite page shows a complete Slip-House plant in one machine, which comprises one Double Blunger, one Double Sifter, one Agitator, one Filter Press and one Slip Pump and on the following pages our No. 1 machine. This machine is built for the express purpose of testing clays, or the manufacture of fine special bodies. It is easily operated by one workman; takes very little power, and is complete in every particular. It requires no foundation, but is wood-screwed down to the floor. It is driven by a tight and loose pulley, friction-clutch, or motor, when desired.

The different kinds of clay, etc., are thrown into the Blunger (which is filled with the proper amount of water from a pipe entering at the top) through the hopper shown. When the ingredients have become mixed with water at the proper weight, generally about 22 to 28 ounces to the pint, the valve on pipe leading to the sifter is opened and the liquid clay or slip allowed to run through the sifter, which removes all the dirt and sand. The slip then passes into the agitator, which keeps it constantly in motion, thus preventing the clay from settling to the bottom. The slip is pumped from the agitator into the filter press (with pump shown on end of filter press) until the water ceases to flow from the press; it is then evident that the press is full, or pumped up, and it is ready to empty. With a few turns of the handwheel, the press can be opened and the cakes of clay removed; the clay is then ready for use. We build these machines in three sizes, of the following dimensions:

Size	Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Capacity Per 10 Hours	H. P.
No. 1	5¼ ft.	2,000 lbs.	2400	4 x 7 ft.	3½ x 15 in.	125	500 to 1,000 lbs.	6
No. 2	8 ft.	6,000 lbs.	6500	4½x11 ft.	4½ x 20 in.	100	1,500 to 2,000 lbs.	8
No. 3	10½ ft.	9,000 lbs.	9700	8 x 14 ft.	5½ x 25 in.	90	3,000 to 4,000 lbs.	11

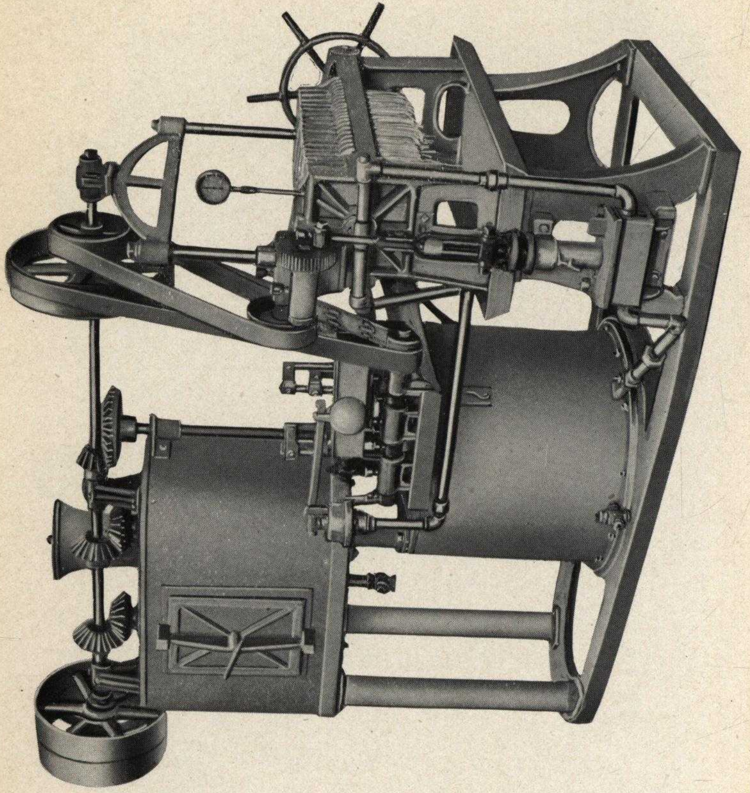
CLAY MIXING AND WASHING MACHINE

This Cut Shows Our No. 2 Outfit

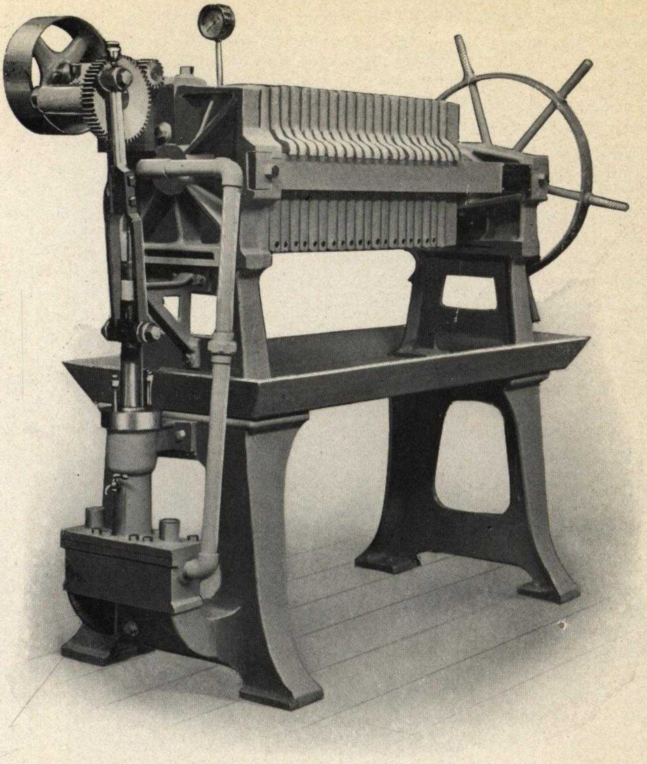


No 1 Clay Mixing and Washing Outfit

For Lavatory and Experimental Work



Filter Press and Pump Combined



Designed for the laboratory and for experimental or educational purposes. It is a very economical and efficient process for preparing bodies and clays for experiments.

A valuable outfit for schools of clay-working and ceramics, color, paint and drug manufacturers, oil refineries, etc.

Indispensable in experimental departments of large plants.

Size	Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Capacity	H. P.
No. 1	3 ft.	660 lbs.	800	3½ x 1½ ft.	3½x15 in.	125	See Filter Press	2
No. 2	4¾ ft.	1,735 lbs.	2000	5½ x 2½ ft.	4½x20 in.	75	See Filter Press	3
No. 3	5 ft.	3,000 lbs.	3500	8 x 3 ft.	5½x25 in.	120	See Filter Press	5

We manufacture an improved Clay Filtering Press, which is made with any number of cast-iron chambers desired, each having an independent feed valve, the advantage of this being well known. Another great improvement we have in this machine over the old style wood or iron press is the manner in which the bag or cloth is connected with the leaves. The bags are cut the proper length from a roll of duck, requiring no stitching whatever; the cloth is hung over the leaves an equal length on each side; the liquid clay or slip is filtered between two cloths on each leaf or chamber; the nipple or inlet is placed in the center of the upper part of the chambers.

This machine is built of the very best materials. The valves are made of iron and carefully fitted with bronze plugs; the chambers or leaves are made of soft gray iron and faced perfectly smooth and true. The head blocks are heavy and well ribbed. The side bars are made of wrought iron 1¼x6 inches, supported by center legs. The large hand-wheel is 7 feet in diameter, and is used for pressing the leaves up tight; the large screw is made of hammered steel 3½ inches in diameter, with heavy square thread. The small hand-wheel is used for tightening up the valves. The weight varies according to the number of leaves. The floor space required for a sixty-chamber press is 8x18 feet. The space between the legs is 4 feet 4 inches, allowing room for truck to pass under. The capacity is about 40 to 50 pounds to the chamber. The time required to pump up a china body is from forty-five to sixty minutes; can be taken out in twelve minutes and operated by two ordinary men or good-sized boys. Our claims for this machine are as follows:

It is substantially and carefully built. Can be filled and discharged in less time than any other in use. The clay is perfectly uniform throughout the press. The cost of bags is less than one-half any other. It is easy to operate.

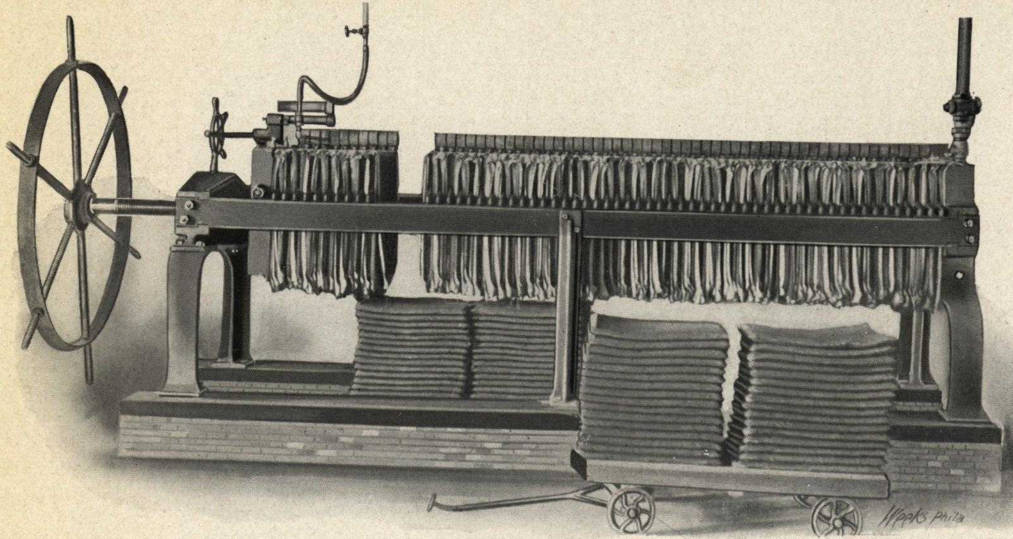
We have spared no expense to make this press meet the wants of the modern potter. and fully guarantee it in every particular.

Our Filter Presses are built in the following standard sizes:

Size of Leaf	No. of Chambers	Capacity Each Chamber	Capacity Each Press	Length of Press Over All	Width of Press Over All	Height of Press Over All	Shipping Weight
9 in. sq.	20	3 lbs.	60 lbs.	4 ft.	12 in.	18 in.	440 lbs.
9 in. sq.	30	3 lbs.	90 lbs.	4 ft.	12 in.	18 in.	580 lbs.
9 in. sq.	40	3 lbs.	120 lbs.	4 ft.	12 in.	18 in.	700 lbs.
12 in. sq.	20	9 lbs.	180 lbs.	5 ft.	18 in.	24 in.	703 lbs.
12 in. sq.	30	9 lbs.	270 lbs.	5 ft.	18 in.	24 in.	930 lbs.
12 in. sq.	40	9 lbs.	360 lbs.	5 ft.	18 in.	24 in.	1,800 lbs.
18 in. sq.	20	27 lbs.	540 lbs.	9 ft.	24 in.	50 in.	2,100 lbs.
18 in. sq.	30	27 lbs.	810 lbs.	9 ft.	24 in.	50 in.	3,900 lbs.
18 in. sq.	40	27 lbs.	1,080 lbs.	9 ft.	24 in.	50 in.	3,700 lbs.
24 in. sq.	40	45 lbs.	1,800 lbs.	11 ft.	84 in.	90 in.	10,800 lbs.
24 in. sq.	60	45 lbs.	2,700 lbs.	14 ft.	84 in.	90 in.	14,400 lbs.
24 in. sq.	75	45 lbs.	3,375 lbs.	16 ft.	84 in.	90 in.	17,100 lbs.
24 in. sq.	80	45 lbs.	3,600 lbs.	18 ft	84 in.	90 in.	18,000 lbs.
24 in. sq.	100	45 lbs.	4,500 lbs.	20 ft.	84 in.	90 in.	21,600 lbs.

The Pressure on this Press should run from 60 to 80 pounds per square inch.

FILTER PRESS



The Only Filter Press with Independent Feed

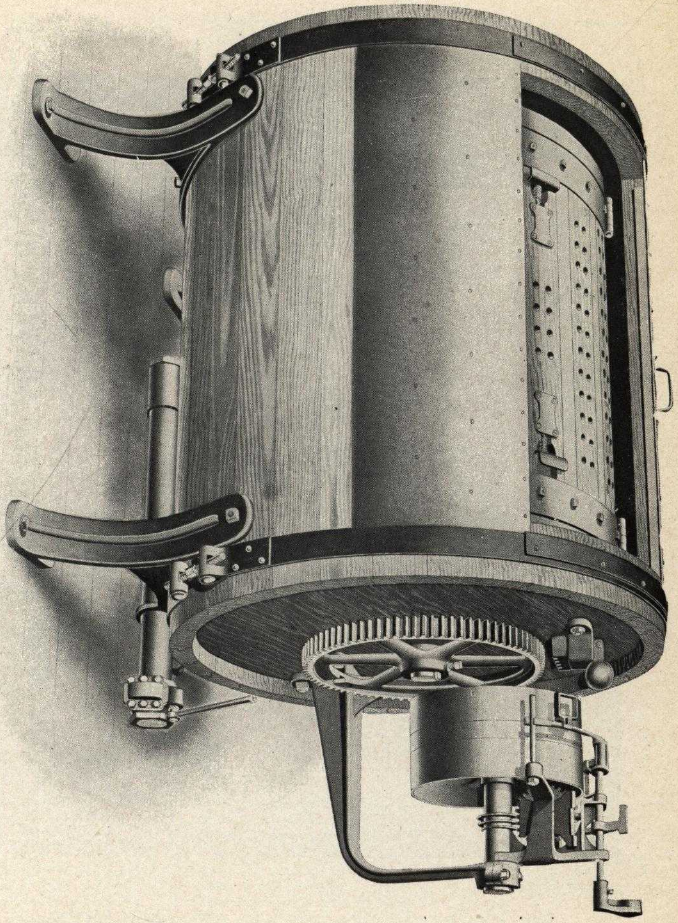
These machines are constructed with outer cylinder or tub of selected southern long leaf yellow pine, 2-inch stock, with sliding door of galvanized iron and adjustable hoops. The inner or revolving cylinders have heads and staves of selected southern pine and ribs of maple; the front ribs, into which the door closes, being so constructed that articles cannot be lost by the shrinkage of the door. Provided with improved reversing header, which embodies simplicity, strength and durability. They are adjustable to take the belt from any direction and have automatic device for starting or stopping the machine. The working centers are carried on a connected plate so that the meshing of the gears is not affected by the expansion or contraction of the outer tub. All gears are machine cut.

NUMBERS AND DIMENSIONS

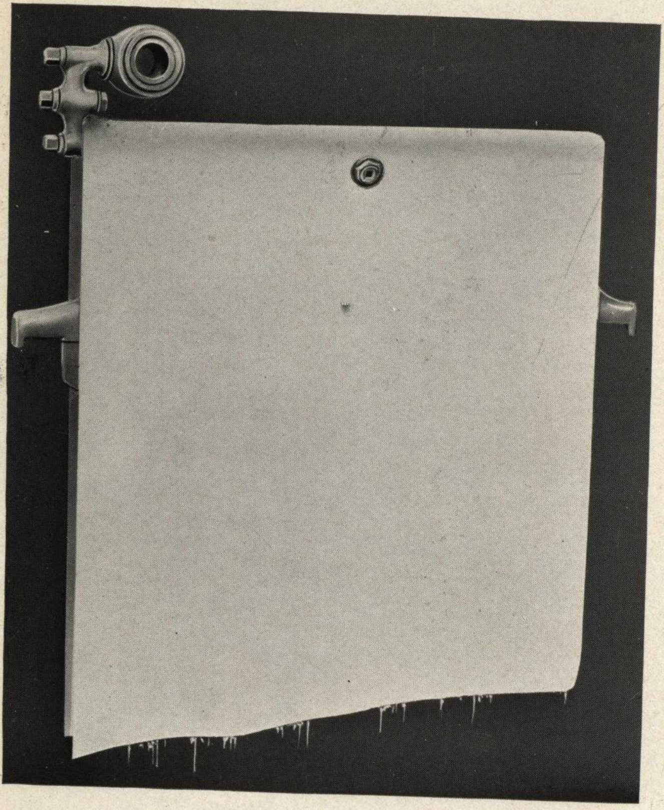
Number and Gear	Size of Inner Cylinder, inches	Diameter of Pulleys, inches	Revolutions Per Minute	Width of Belt, Inches	Face of Pulley on Line Shaft, inches
No. 21 reversing	28 x 33	13	190	1¼ and 1½	7
No. 22 reversing	28 x 48	15	190	1½ and 2	8½
No. 23 reversing	30 x 55	15	190	1½ and 2	8½
No. 24 reversing	36 x 33	15	170	1½ and 2	8½
No. 25 reversing	36 x 54	15	170	1½ and 2	8½
No. 26 reversing	36 x 64	20	210	2 and 2½	11

Water Connections, Hot and Cold, inches	Steam Connections, inches	Waste Outlet, inches	Floor Space, inches	Shipping Weight, Pounds	Gear
1½	½	2	38 x 63	850	Single
1½	½	3	38 x 80	1,050	Single
1½	½	3	42 x 88	1,200	Single
1½	½	3	44 x 62	1,200	Single
1½	½	3	54 x 94	1,600	Double
2	½	3	58 x 112	2,100	Double

Washing Machine for Filter Press Clothes



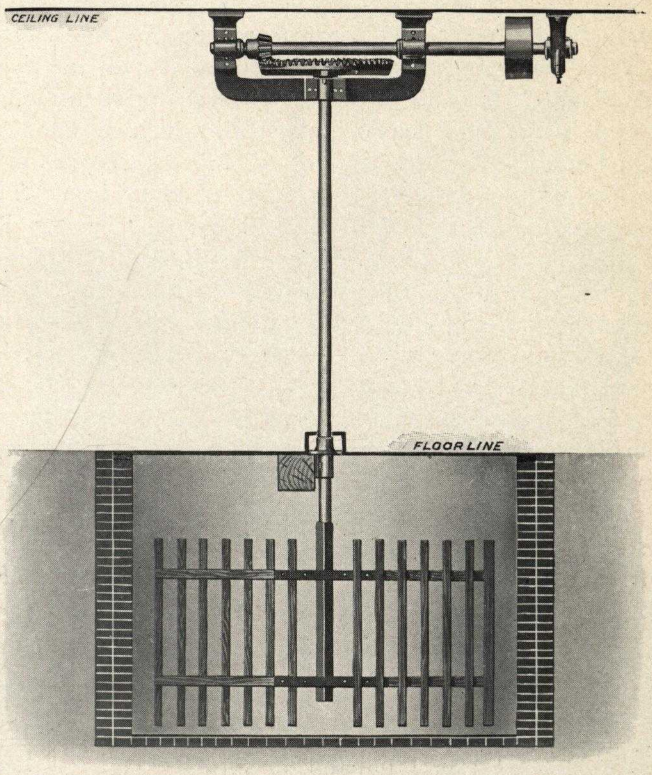
This Cut Shows Clay Press Leaf With Press Cloth and Valve In Position



WE CARRY DUPLICATE PARTS IN STOCK

Agitator or Receiving Tank for Slip from Blunger

(**Style "A"**)



This cut shows our Clay Agitator, which is used for agitating the liquid clay or slip before it is pumped into the filter press. It is lined with vitrified bricks. The arms or wings are made of hard wood, firmly bolted to vertical shaft. The upper part or driving gear is securely fastened to girders or ceiling. The arms can be made any length to suit any diameter of well. The dimensions of this machine are as follows:

Speed of driving pulley	93 r. p. m.
Width of face and diameter	6 x 15 in.
Horse power required	4. h. p.
Shipping weight	800 lbs.

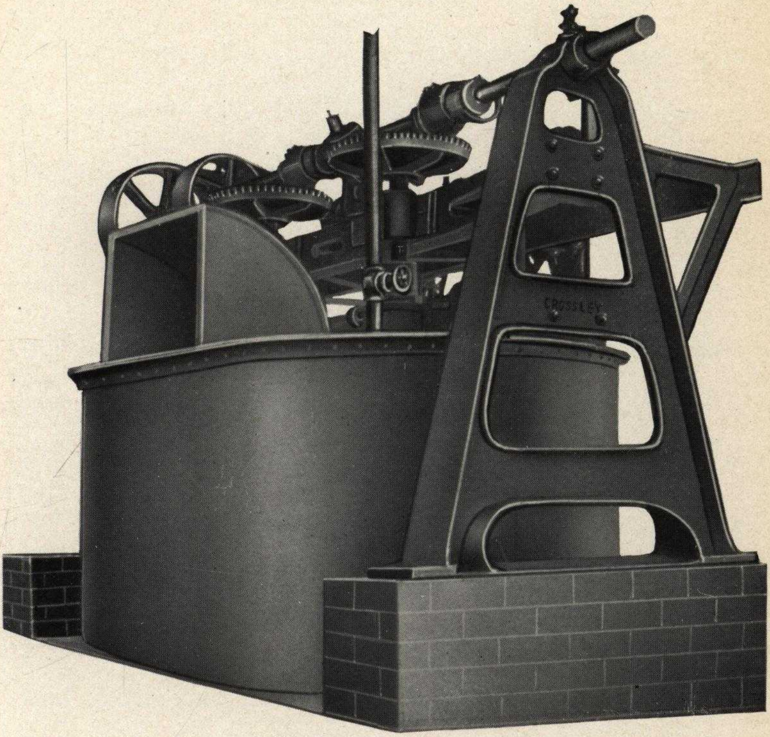
The illustration on the opposite page shows our improved double stepless blunger or mixer, which is used in pottery, tile, terra cotta, electric porcelain plants and all clay working plants where it is desired to mix up different kinds of clays and other materials into a liquid form to be pumped into filter presses.

This Blunger is a great improvement over our former production. It is made of the very best material throughout, the tank is made of heavy tank steel, which is lined with vitrified brick. The housings or "A" frames, separators and gears are made of the very best grade of Gray Iron. There are two heavy vertical steel shafts running in opposite direction, which are supported with a substantial thrust bearing and which is bolted to bottom separator. There are two steel arms or beaters bolted to each of these shafts. These arms or beaters are so constructed that they tend to raise and keep the lumps and other materials from settling to the bottom of the tank. In blunging clay this material should be blunged to a consistency of 24 to 27 oz. to the pint, which is about the proper weight to be handled economically.

When two or more of these machines are desired we can construct them in rows or sets driving them from same line shaft. These machines are made in two standard sizes of the following dimensions :

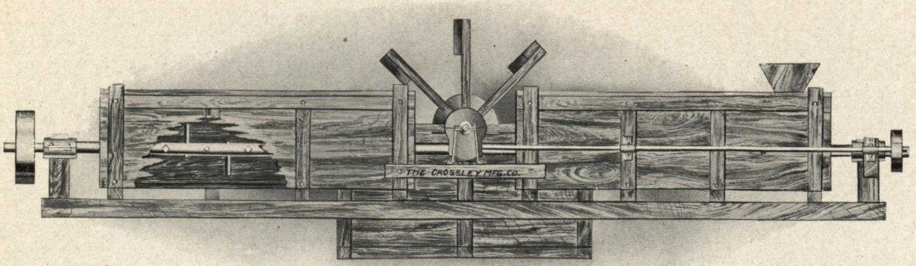
	Height	Weight	Floor Space	Driving Pulley	Speed	Capacity	H. P.	Export Weight
No. 1	8 ft.	3,000	7 ft. x 9 ft.	10 in. x 28 in.	100 rev. per min.	2,500 lbs.	5 to 8	11,400 lbs.
No. 2	10 ft.	6,000	7 ft. x 13 ft.	12 in. x 30 in.	120 rev. per min.	7,000 lbs.	12 to 15	8,000

IMPROVED STEPLESS BLUNGER



Our Clay Washer and Sand Wheel combined is principally used in clay-washing plants for removing the sand and stones from the clay. The large box at the hopper end of the washer receives the clay just as it comes from the mines, and after being mixed with water to the proper consistency, it runs out through a spout to the sand wheel, which picks up the slip or liquid clay, allowing the clay substance to pass into the next box, the sand and stones remaining in the buckets until it reaches the bottom, when it is dropped into a receiver, or box, to be removed as sand. The beater arms are constantly in motion, thus breaking up all the lumps and thoroughly dissolving the clay. This machine is invariably built to meet the existing requirements; it is therefore impossible to have a standard size. We shall be pleased to send dimensions and further information upon request.

Clay Washer and Sand Wheel Combined

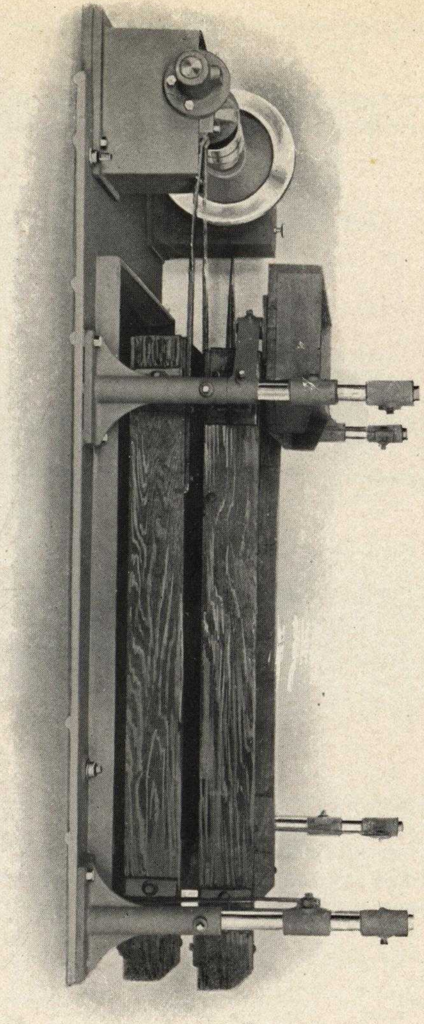

THE CROSSLEY MFG. CO.

Let us Estimate on Your Requirement in this line

This Sifter has been proven, by years of careful study and experimenting, to be the best that experience can produce. We believe we have solved a problem, in this machine, that has long worried the potter and clay-worker and we are glad to offer it to the trade.

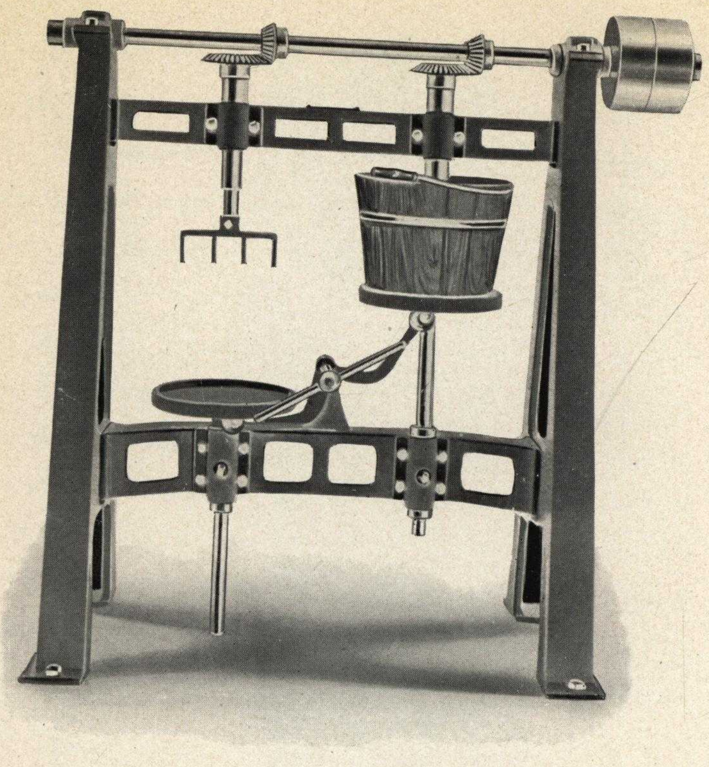
The slip is run into the box on top of the machine; from thence it drops through the top screen, which is generally of a coarser mesh than the bottom screen, and passes through the lower one and thence to the receiver, free from sand, grit, etc., ready for use. Owing to the high speed at which this machine runs, it can be appreciated how necessary it is that the materials and workmanship must be of the best, which fact will be found to be carried out in this machine. It is built in two sizes, of the following dimensions:

Size	Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Capacity	H. P.
A	2½ ft.	1,000 lbs.	1400 lbs.	4 x 7¼ ft.	5 x 5 in.	750	Depends on nature of clay	2½
B	2½ ft.	1,200 lbs.	1600 lbs.	4 x 6 ft.	5 x 5 in.	750	Depends on nature of clay	4



VIBRATING SIFTER OR LAWN

BUCKET BLUNGER OR MIXER



This machine was designed for use in the laboratory or mixing-room, for blunging up small quantities of material. Ordinary buckets are used, thus permitting of several different mixtures to be blunged simultaneously. It is a very simple and well-built machine, and is essential to every mixing-room, requiring a very small amount of power and taking up very little space.

Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Capacity	H. P.
4 feet	300 lbs.		2 x 3½ ft.	2½ x 7 in.	60	Two ordinary buckets	¾

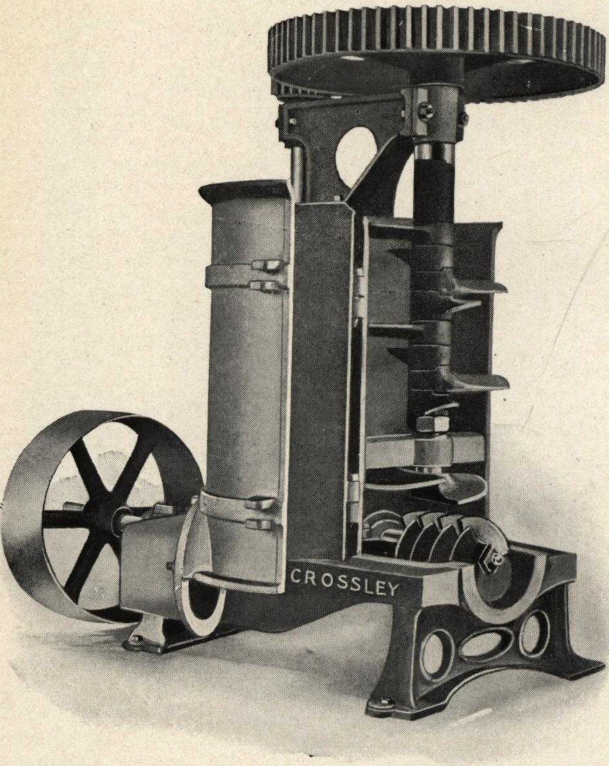
Illustrations on Pages 32 and 33.

In our Pugging Machine we have combined both simplicity and durability in an effort to build a machine that would meet the requirements of the clay worker. Owing to the principles upon which this machine is based, we are safe in saying that this pugging machine is the best on the market. The 12-inch machine is generally used in small plants, or for laboratory and experimental purposes. The 20-inch is the standard pug mill for potteries, for pugging china and general potters' clay. The 24-inch mill is used for wedging and pugging sagger clay and fire clay. There is a series of knives and worms in the barrel, which cut and compress the clay into a homogeneous mass, thereby freeing it of lumps, air blisters, etc. The clay is forced out at the bottom through the mouth piece, which is made in any form desired, generally round or square. We build these machines in three sizes, of the following dimensions:

Size	Height	Weight	Export weight	Floor Space	Driving Pulley	Speed	Capacity	H. P.
12 in.	4 ft.	550 lbs.	700 lbs.	18x35 in.	4 x 18 in.	175	4 tons per day	4
20 in.	6 ft.	3,000 lbs.	3,600 lbs.	2½x48 in.	8 x 24 in. T. L.	140	15 tons per day	8
24 in.	7 ft.	6,000 lbs.	6,500 lbs.	36x48 in.	10½ x 30 in.	110	30 tons per day	14

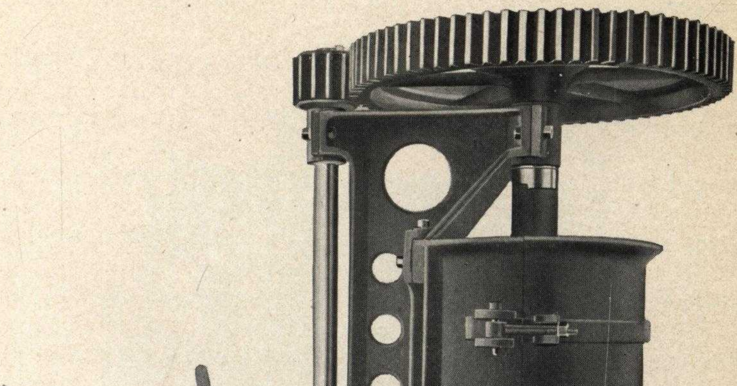
PUGGING MACHINE

(Showing Interior)



When ordering knives, worms, pushers, or other parts of pug mills, state diameter of barrel and whether "A" or "B" is on the knives.

PUGGING MACHINE

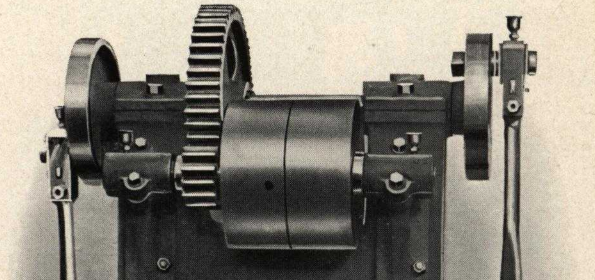


Our No. 1 Belt-Driven Pump is of entirely new design and construction, and built especially for potters' and clay-workers' use. The valve and valve-chambers are constructed for pumping water, glaze, liquid clay and other gritty substances, and are easy of access; by releasing two hinged bolts, the worn parts can be replaced. Machine-cut gears are used on this pump, and all the parts are accurately made with the best materials and workmanship. We build this machine in one size only, of the following dimensions:

Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed
4 feet	1,000 lbs.	1300 lbs.	1½ x 3 feet	4 x 10 inches T. L.	120

Capacity	Suct. Pipe	Disc. Pipe	Stroke	Dia. of Plung.	H. P.
32 gal. per minute	1½ inches	1½ inches	6 inches	4 inches	4

No. 1 BELT-DRIVEN PUMP

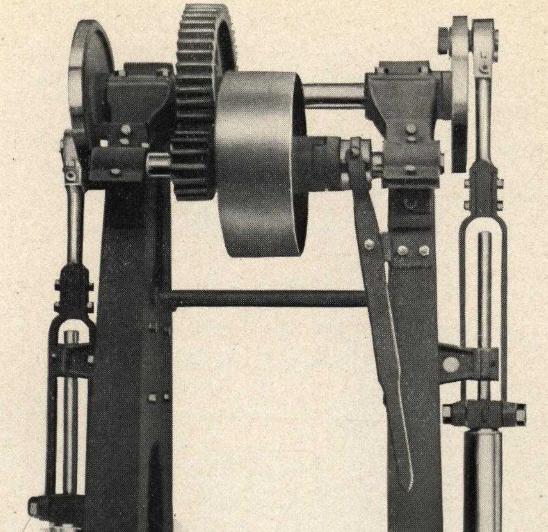


Our No. 2 Belt-Driven Pump is very similar to the No. 1 pump, excepting it is of larger capacity, having a much longer stroke and being a much heavier machine throughout. Its dimensions are as follows:

Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed
7¾ feet	3,000 lbs.	3,500 lbs.	3 x 4 feet	6½ x 18 inches	80

Capacity	Suct. Pipe	Dis. Pipe	Stroke	Dia. of Plung.	H. P.
50 gal. per minute	2 inches	2 inches	11 inches	4 inches	6

No. 2 BELT-DRIVEN PUMP

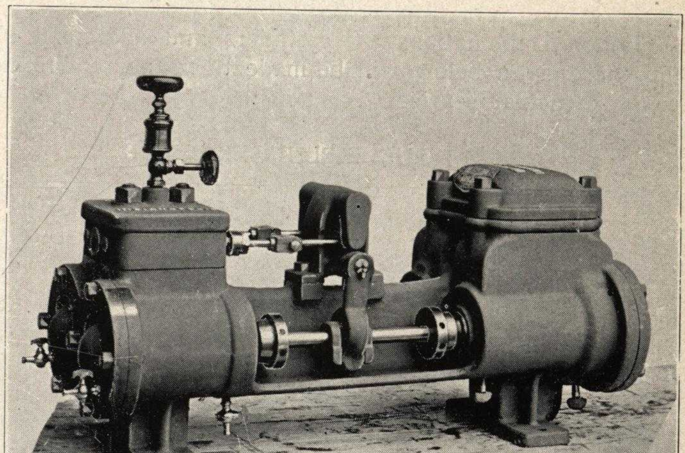


The Pumps in list below are for feeding boilers, for pumping against heavy pressure, and for general water-supply. In ordering, please state whether the pump is for hot or cold water. They are made with packed pistons, with removable liners, or with plungers working through bronze rings. For a slight additional charge pumps will be brass fitted.

LIST OF DUPLEX BOILER FEEDERS OR PRESSURE PUMPS

Diameter of Steam Cylinder	Diameter of Water Plungers	Length of Stroke	Gallons Per Stroke of One Plunger	Strokes Per Minute of Each Plunger	Gallons Per Minute at Stated Number of Strokes	SIZES OF PIPES			
						Steam Pipe	Exhaust Pipe	Suction Pipe	Discharge Pipe
4	2½	4	.08	100 to 150	16 to 24	½	¾	2	1½
4	2¾	4	.10	100 to 150	20 to 30	½	¾	2	1½
5	3¼	5	.18	75 to 150	27 to 34	¾	1¼	2	1½
6	4	6	.33	75 to 150	50 to 80	1	1½	3	2
5½	3¾	7	.33	75 to 150	50 to 80	1	1½	3	2½
7	4	10	.55	75 to 100	80 to 110	1½	2	4	3
8	5	10	.85	75 to 100	130 to 170	1½	2	4	3
9	5¼	10	.93	75 to 100	140 to 185	2	3	4	3
9	5½	10	1.02	75 to 100	150 to 200	2	3	5	4
9	6	10	1 22	50 to 100	125 to 246	2	3	6	5
10	6	10	1.22	50 to 100	125 to 245	2	3	6	5
12	7	10	1.66	50 to 100	165 to 335	2½	3	6	5

DUPLEX PRESSURE PUMPS



Duplex Double Plunger Steam Pump

(Pot Valve Pattern)

Plunger Pumps, especially under the higher range of pressures, have certain advantage over "Piston" Pumps. They are remarkably durable, the only wearing parts in the pump-end being the packing of the plunger stuffing boxes. No leak can occur there without being observed, and is easily stopped by setting up the packing. The plunger not touching the pump castings, there is no cutting or wear; consequently, they require no reboring or refitting when working on gritty or sandy water, which fact makes them invaluable to the clay worker. The piston rods do not enter the pump cylinders, and are, therefore, not exposed to the action of the water.

At a slight additional charge, these pumps will be brass fitted.

Other combinations of cylinders and additional sizes than those given below will be made to fit the requirements of any particular service.

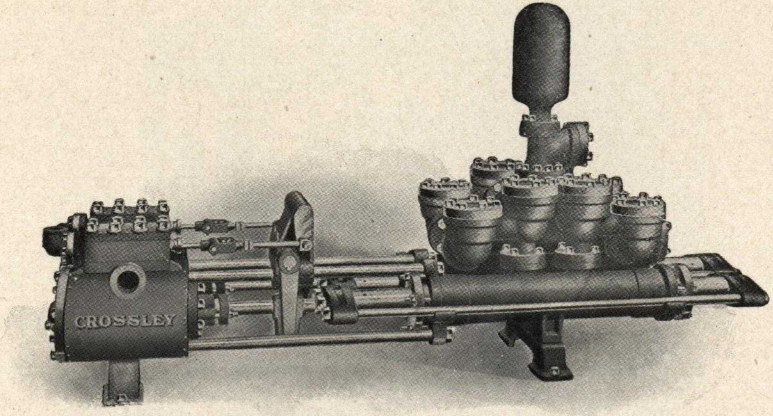
SIZES DOUBLE PLUNGER PUMPS

Diameter of Steam Cylinders	Diameter of Water Plungers	Length of Stroke	Gallons Per Stroke of one Plunger	Strokes Per Minute of Each Plunger	Gallons Per Minute at Stated Number of Strokes	SIZES OF PIPES			
						Steam Pipe	Exhaust Pipe	Suction Pipe	Discharge Pipe
5	3¼	5	.18	50 to 100	18 to 36	¾	1¼	2	1½
6	4	6	.33	50 to 100	33 to 66	1	1½	3	2
7	4	10	.55	40 to 80	44 to 88	1½	2	4	3
8	4	10	.55	40 to 80	44 to 88	1½	2	4	3
9	4	10	.55	40 to 80	44 to 88	2	2½	4	3
10	4	10	.55	40 to 80	44 to 88	2	2½	4	3
8	5	10	.85	40 to 80	72 to 144	1½	2	4	3
9	5	10	.85	40 to 80	72 to 144	2	2½	4	3
10	5	10	.85	40 to 80	72 to 144	2	2½	4	3
10	6	10	1.22	40 to 80	96 to 192	2	2½	6	5
12	6	10	1.22	40 to 80	96 to 192	2½	3	6	5
12	7	10	1.66	40 to 80	130 to 260	2½	3	6	5

Duplex Double Plunger Steam Pump

FOR PUMPING LIQUID CLAY AND OTHER GRITTY SUBSTANCES

(Outside End Packed Style)



For Feeding Boilers, Pumping Water containing Sediment or Grit, Working on Oil Lines, Hydraulic Presses, and for Mining Purposes.

STYLE A

5 ft. in Diameter

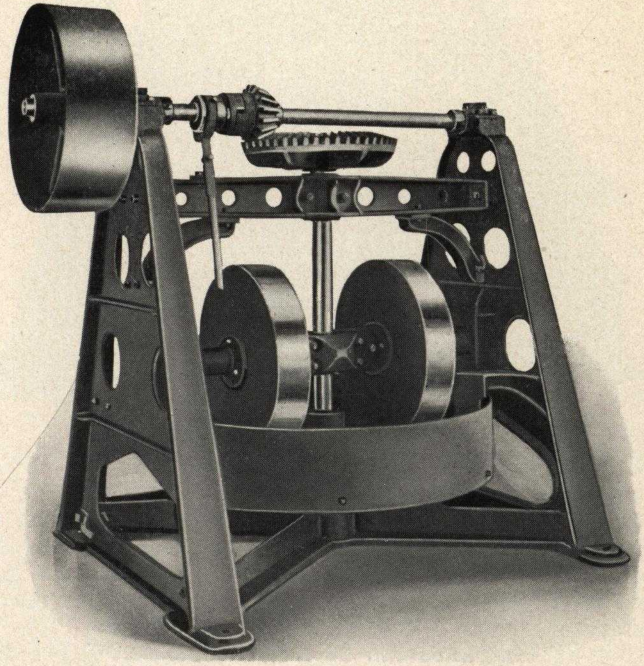
Owing to the fact that it is necessary to construct a very strong machine for grinding grogg from saggers, bricks, terra cotta and other materials, we have designed a machine which is strong where strength is needed, and at the same time having no superfluous weight. We believe that in our standard Wet or Dry Pans we have built a machine that will successfully withstand the constant strain placed upon it. This machine is self-contained, having the vertical shaft bottom bearing connected by means of the iron separator to the base of the housings. The materials are thrown into the revolving pan, which has screen plates on the bottom. There are two aprons or diverter arms in front of the rollers, which keep all the material under the rollers to be crushed. The crushed material passes through the screen plates and under the machine, where it is caught in a bin.

This machine has as few working parts as possible, thereby minimizing the repairs. Electric-motor drive, direct connected, can be furnished for this machine when desired.

Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Capacity	H. P.
7 feet	7,000 lbs.	7,650	6 x 6½ feet	24 x 8 in.	120	30 to 40 tons per day	8

WET OR DRY PAN

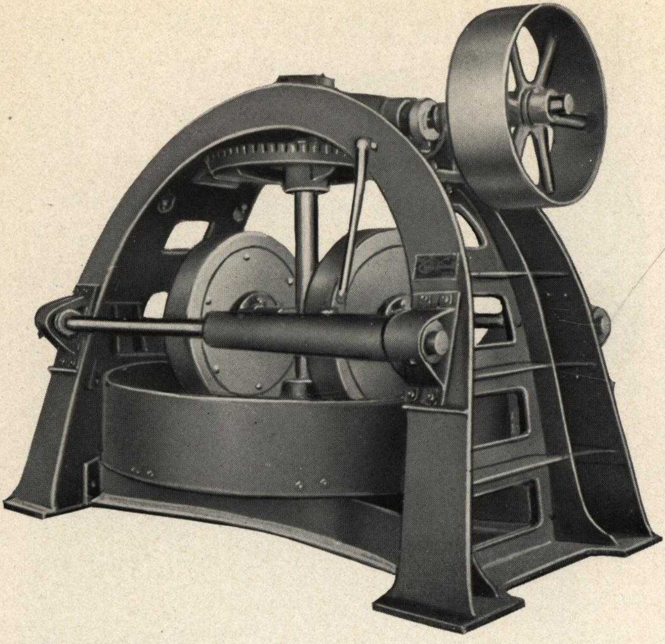
(Style "A")



Made in One size only

STYLE B

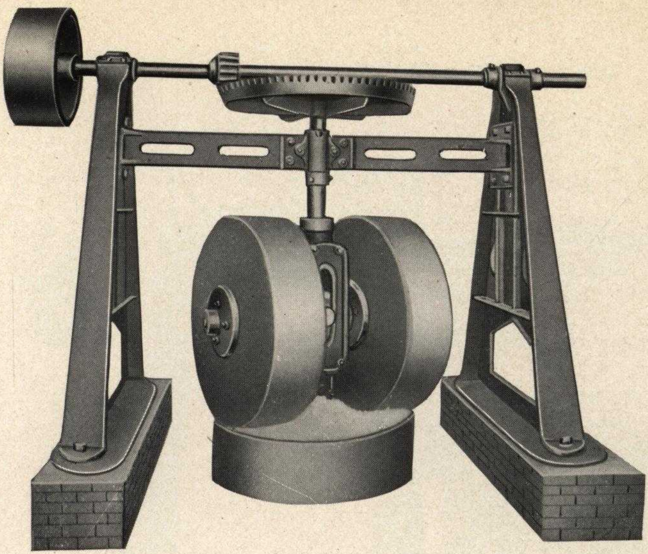
Made in Two Sizes only 4 ft. by 6 ft.



This Wet or Dry Pan is the heaviest and most substantially-built machine yet placed on the market. It is used for grinding and breaking up fire brick, saggers, sewer pipe and all kinds of refractory materials. This machine is built for grinding either wet or dry materials. Any size mesh of screen plates can be furnished to suit any requirement. The frame is heavily ribbed, and is constructed so that the whole machine is self-contained. It can be driven by electric motor or other means, as desired.

Size	Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Capacity	H. P.
4 ft.	5 ft. 3 in.	6,000 lbs.	6,000 lbs.	4½ x 7 ft.	8 x 24 in.	125	About 40 to 60 tons per day	8
6 ft.	8 ft.	13,000 lbs.	13,500 lbs.	6½ x 9 ft.	9 x 30 in.	140	About 80 to 90 tons per day	15

FRET GRINDER OR CHASER MILL



This illustration represents our machine for grinding fretts, broken biscuit ware, flint, spar and other materials. It is constructed with a view to strength and economy. The stones and runners are made of the best New York State burr stone or granite, which has the reputation for its hardness and strength. This machine is furnished with friction clutch or electric motor drive when desired. The stones are made in sizes, depending upon the materials to be ground—42-inch and 48-inch by 12-inch face, and 5-feet 6-inch diameter x 18-inch face. Its capacity depends upon the materials being ground.

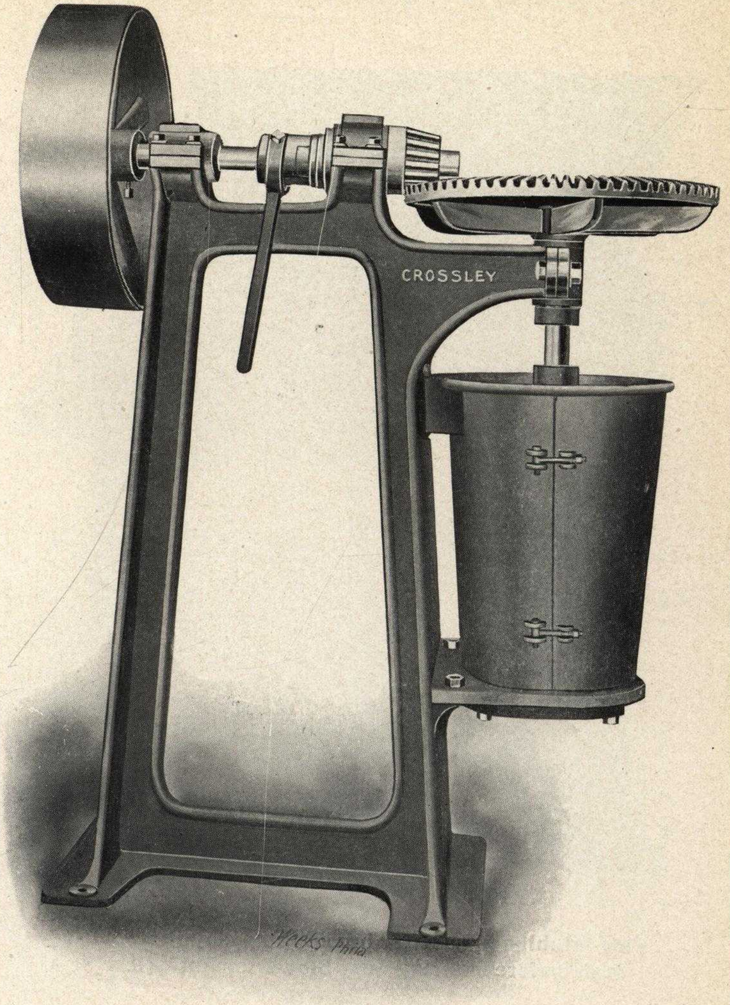
Height	Weight	Export Weight	Floor Space	Speed	H. P.	Sizes of Stones
8 feet	About 8000 lbs.	8,500 ft.	7 x 8 ft.	65	8 to 10	42″ x 12 ft. 4″ 48 x 12 inches
11 ft. 6 in.	13,000 lbs.	13,800 ft.	9 ft. 6″ x 16″	50	10 to 15	5 ft. 6 x 18 inches

We have this Wad Machine in use in a great many potteries in this country, and it has been giving entire satisfaction wherever it is installed. The barrel and the bottom dies are on hinges, and in cleaning the machine it is only necessary to release the two bolts and barrel will swing back on its hinges. It also has a number of other improvements, which we have not space to enumerate.

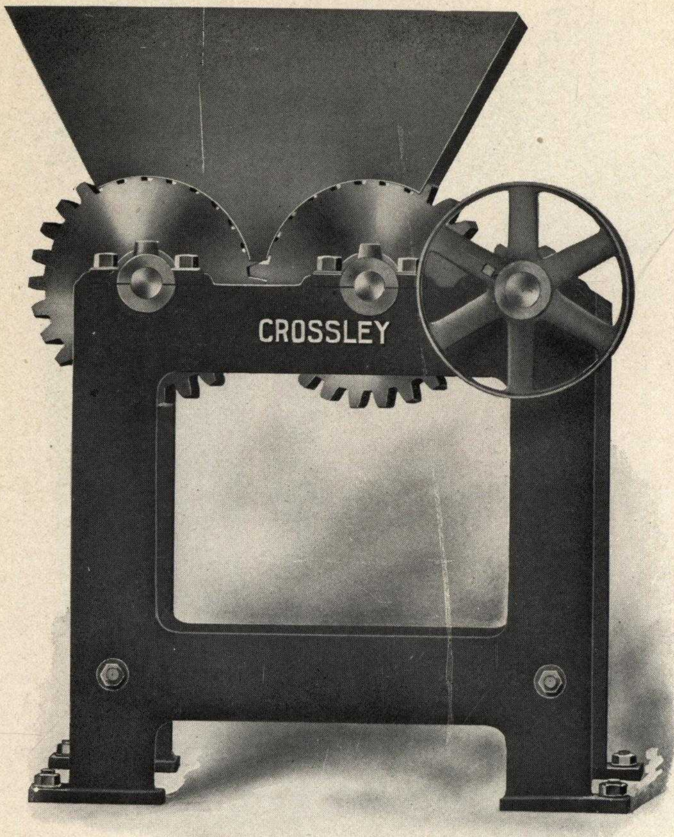
Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Capacity	H. P.
7½ ft.	2,000	2,400	3 x 5 ft.	6 x 24 in. T. L.	100	Depends on nature of clay	6

This machine can be arranged to make tubes, squares or any particular shapes desired.

BELT-DRIVEN WAD MACHINE

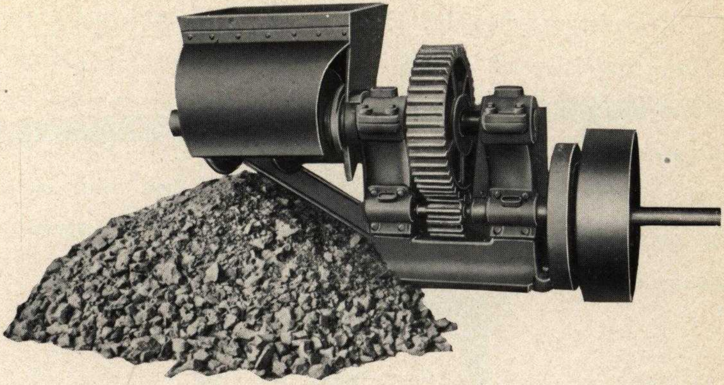


CLAY DISINTEGRATOR



This machine is used for breaking up clay in a semi-dry state before entering dust Blower or Pulverizer

IMPROVED CLAY DISINTEGRATOR



This disintegrator is used for breaking up the large lumps of clay before entering Blunger, this reduces the time taken to Blunge material.

Made in the Following Sizes:

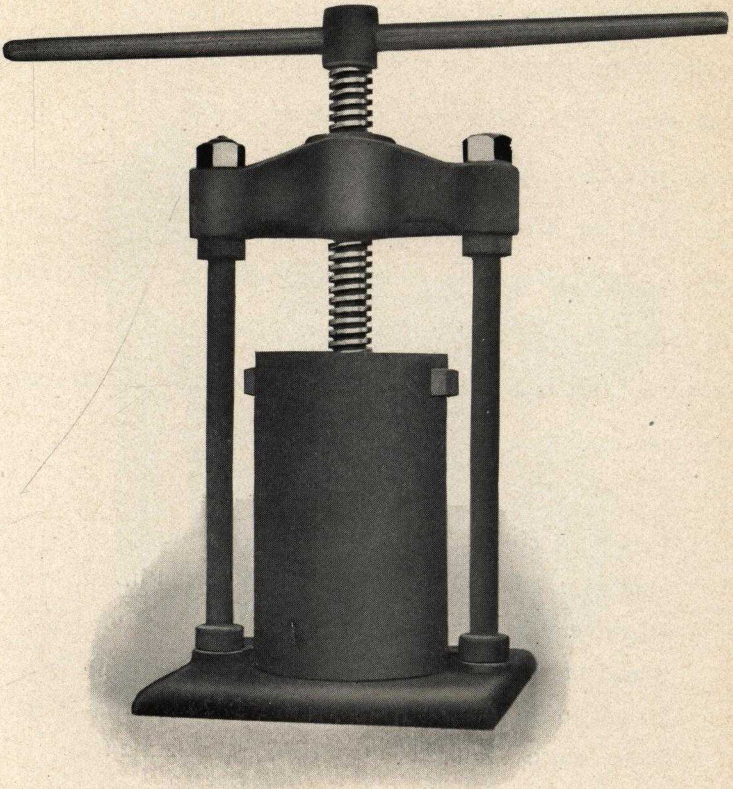
Size	Height	Weight	Export Weight	Floor Space	Speed	Pulley	H. P.
No. 1	2 ft. 3 in.	800	1,000	2 x 5 ft.	120	4½ in. x 20 in.	5 H. P.
No. 2	2½ ft.	1,500	1,900	2 x 6 ft.	120	6 in. x 20 in.	8 to 10

Our Hand-Wad Machine is generally used in small plants, where power is not available. It is operated by means of the hand-bar and screw, which is of such a pitch that it works very easily. It is a very well built machine, whose simplicity of design will be apparent at a glance. When the machine needs cleaning, the barrel can be removed by merely sliding it off the base, after raising the screw up to its full height. We furnish dies with each machine. It is built in one size only, of the following dimensions:

Height	Weight	Export Weight	Floor Space	Diameter of Barrel	Height of Barrel	Capacity
30 inches	450 lbs.	550	18 x 18 in.	8 inches	14 inches	Depends on nature of clay

We can furnish dies to make any forms or shapes desired

HAND=WAD MACHINE

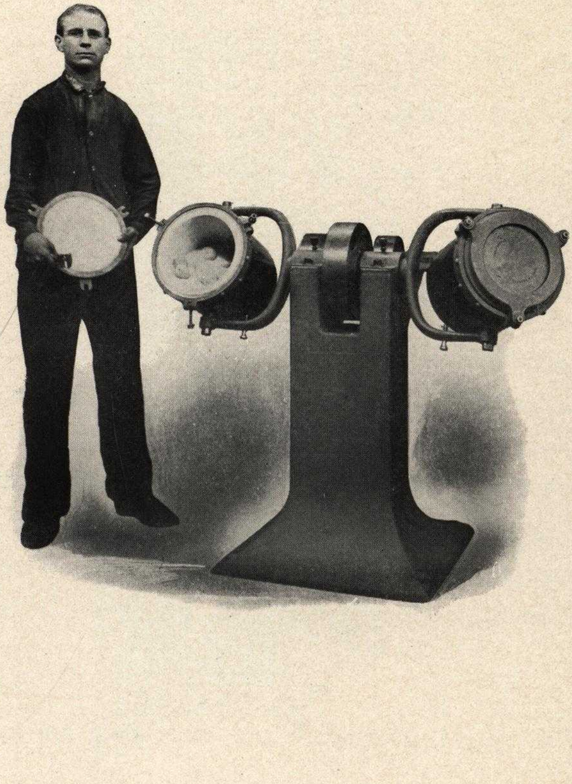


No. 0 BALL MILL

This half-tone cut shows our Improved Ball Mill, which fills a long-felt want in potteries, tile works, laboratories, drug and chemical factories. The left cylinder in the cut has the lid off ready to charge, and the right cylinder discharging. It is a very simple and easily-operated machine. The cylinders work on trunnions and are lined with porcelain, which is tightly sulphured in the iron case. The lids are also porcelain, having a thick rubber washer all around the outside flange, thus making the porcelain cylinders perfectly air and water tight. This machine is very substantially built throughout, the stand being made in one casting. Its dimensions are as follows:

Length of cylinders (inside)	12 in.
Diameter of cylinders (inside)	10 in.
Diameter of driving pulley	6½ in.
Speed of driving pulley	114 r. p. m.
Height, over all	3½ ft.
Floor space required	2 x 2 ft.
Capacity, each cylinder	4 gals.
Weight of machine	400 lbs.
Export Weight	600 lbs.

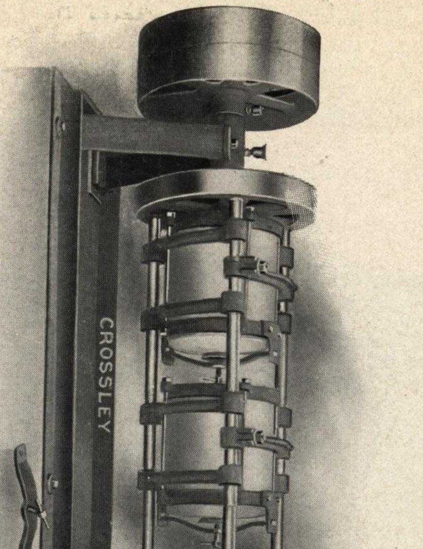
No. 0 BALL MILL



This cut shows our Four-jar Ball or Pebble Mill. The clamping device is so arranged that by loosening a thumbscrew the jar can easily be taken out and discharged. It is made with any number of jars desired. The materials used in construction and the workmanship are the best. The jars are made of the finest and hardest porcelain. This mill is used extensively for grinding drugs, colors, glazes and other liquid and solid materials. The dimensions of this machine are as follows:

Length of porcelain jars (inside)	8½ inches.
Diameter of porcelain jars (inside)	7½ inches.
Diameter of driving pulley	15 inches.
Speed of driving pulley, about	60 revolutions.
Height of machine, over all	20 inches.
Floor space required	1½ x 6 feet.
Capacity, each cylinder	1½ gallons.

The weight, floor space and other data are in proportion to the number of jars desired.



No. 00 BALL MILL

COLOR OR GLAZE MILL

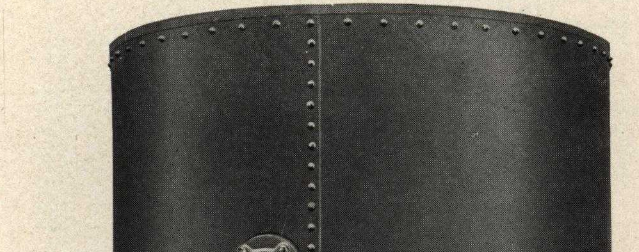
Style A

This machine is our latest production in the way of a color or glaze grinder. It involves all the best principles of our old style machines, in addition to several new features. The interior of the machine is lined with vitrified brick. The grinding bed-stone is a circular disc, in one piece, about five inches thick, of the best New York burr stone. There are two burr stone runners, which are revolved by the vertical shaft on the surface of the bed-stone. It is built in the following standard sizes:

Size	Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Capacity	H. P.
2 ft.	2½ ft.	1,000 lbs.	1200 lbs.	2½ x 3 ft.	4 x 15 in.	50	Depends on material	3
3 ft.	3 ft.	1,500 lbs.	1800 lbs.	3½ x 4 ft.	5 x 20 in.	60	Depends on material	4
4 ft.	4½ ft.	2,000 lbs.	2300 lbs.	4½ x 5 ft.	6 x 24 in.	70	Depends on material	5

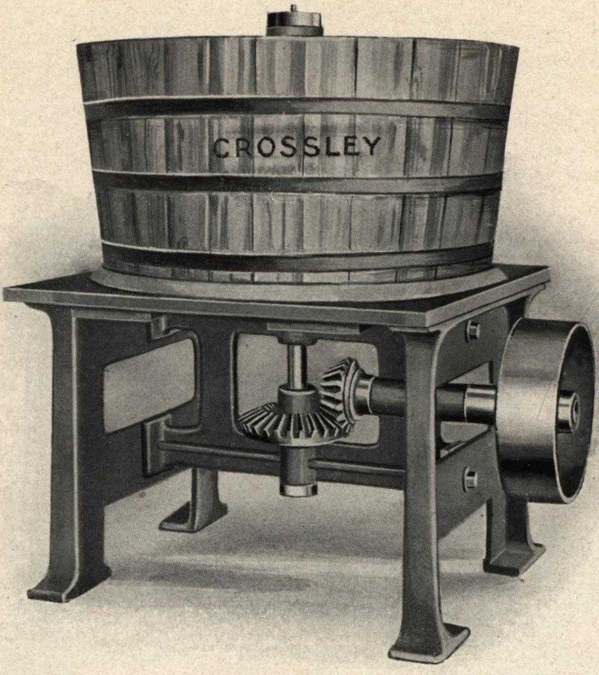
COLOR OR GLAZE MILL

(Style "A")



COLOR OR GLAZE MILL

(Style "AA")

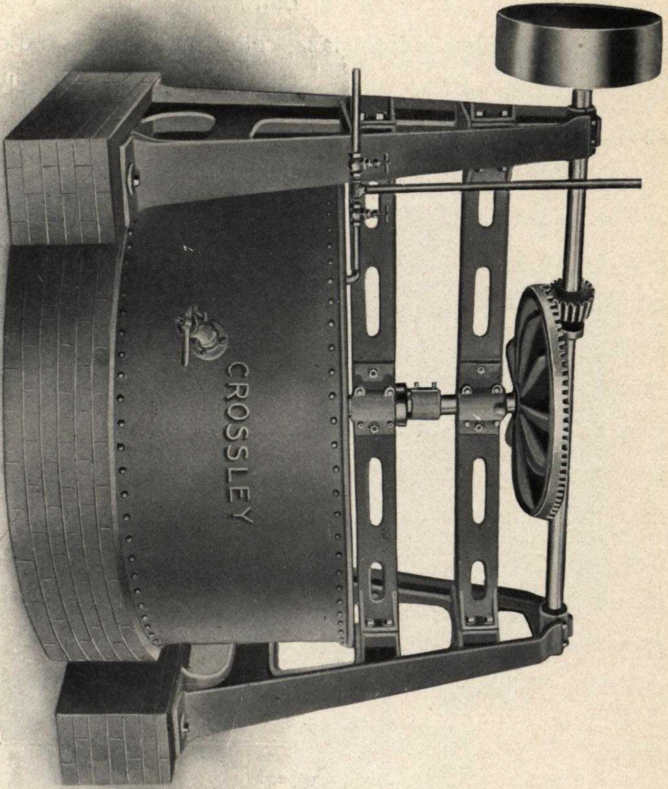


We have designed this machine for the dipping room in potteries where it is desirable to keep the glaze or color constantly in motion while the ware is being dipped. The liquid is kept agitated by the vertical shaft running up through the bottom of the tub, on which is connected arms, which revolve through the material, thereby keeping the heavy particles from settling to the bottom. This machine is very simple in construction and requires very little power to operate.

Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Capacity	H. P.
3 ft.	about 600 lbs.	750 lbs.	2½ x 2½ ft.	3 x 16 in.	30	23 gals.	1

COLOR OR GLAZE MILL

(Style "B")



This mill is made in four sizes, and is used for grinding large quantities of glaze, color, etc. The tank is made of heavy sheet iron, with angle iron riveted to top and bottom so it can be lined with vitrified brick. The housings or "A" frames are made of iron and substantially ribbed and braced; it is driven by clutch pinion and gear. These machines can be furnished in rows or sets of two or more, driven from the same shaft when desired.

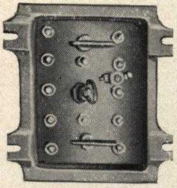
Further information as to sizes, capacities, etc., will be furnished upon request.

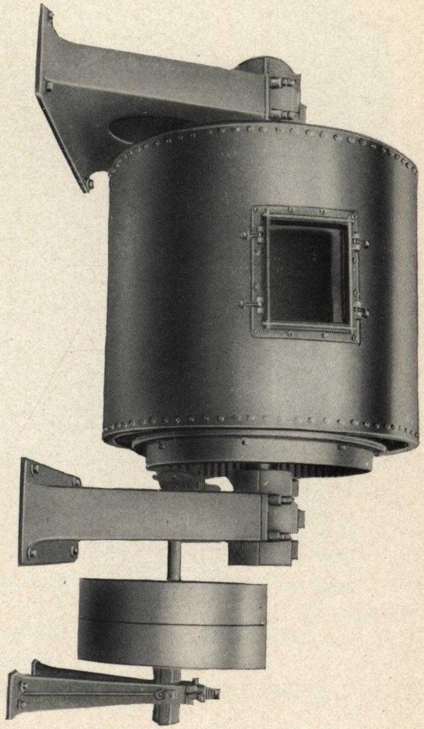
BALL MILLS

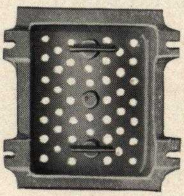
A brief description of our Ball Mill or Grinding Cylinder which is used for grinding glaze, color, flint, spar, sand or any other material of like nature, wet or dry it is absolutely self-contained, having iron housings with side thrust bearings in same. These bearings are made long and of suitable diameter to ensure long life. Each machine is provided with an outlock bearing to keep pinion shaft in perfect alignment. These mills are lined with silex brick which is the hardest and best cutting substance known and are imported by us, or we can furnish same with porcelain or hickory blocks as preferred. Our 2 feet and 3 feet and 4 feet 6 inch mills are made exactly like illustration on opposite page. The 6 feet 8 inch mill is made with the main bearing of the hardened and ground pulley bearing type which reduces the friction to a minimum; this means a great saving in fuel and power. These mills are provided with friction clutch or tight and loose balls as desired. When ordering specify which is wanted.

Size	Weight	Export Weight	Height	Speed	Floor Space	Pulleys
2 ft.	1,244 lbs.	1,334 lbs.	3½ ft.	45	4x2½ ft.	4 x 24
3 ft. 6 in.	5,500 lbs.	5,700 lbs.	4½ ft.	175	4x6 ft.	4 x 18
4 ft. 6 in.	7,070 lbs.	7,200 lbs.	5½ ft.	125	5x10 ft.	8 x 24
6 ft. 8 in.	17,900 lbs.	18,900 lbs.	8 ft.	150	8x15 ft.	10 x 30

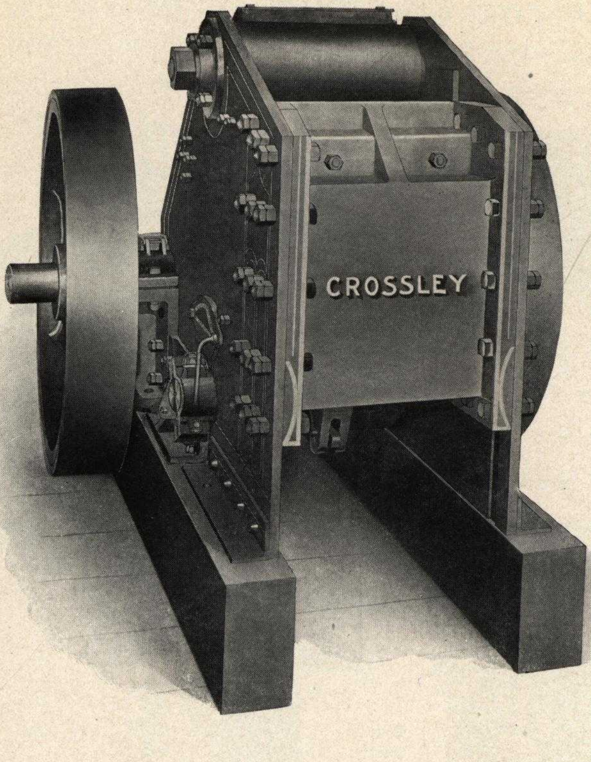
OUR BALL MILL OR GRINDING CYLINDER







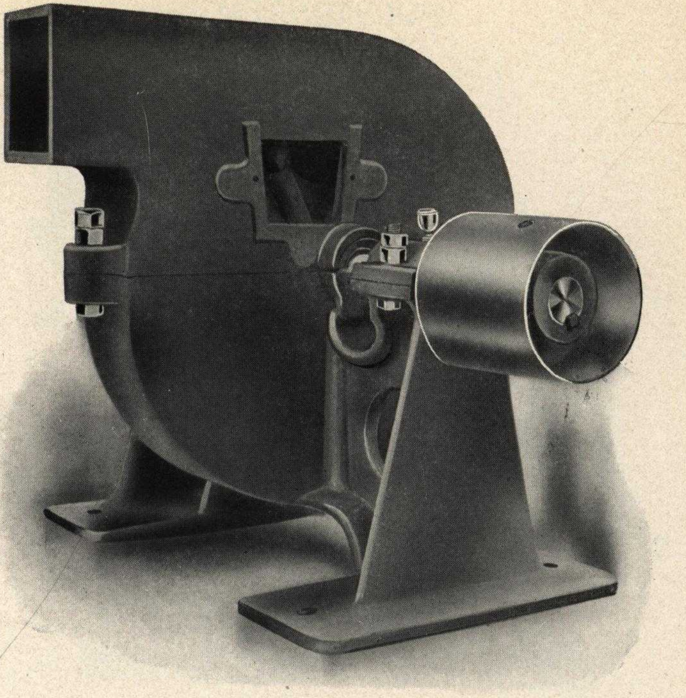
CLAY AND SHALE CRUSHER



LET US ESTIMATE ON YOUR REQUIREMENTS IN THIS LINE

PULVERIZER

STYLE B

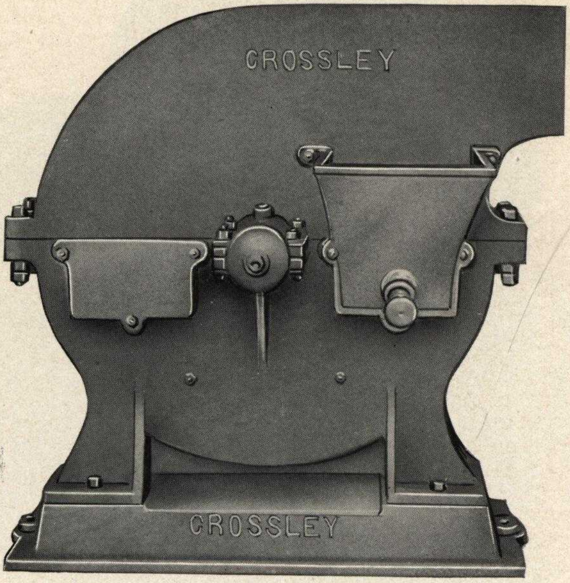


Our Pulverizer is used for pulverizing clay or grinding it to a fine powder. In the iron case are cast-steel beater-arms, which revolve at a very high speed, thus reducing the chunks of clay to a dust. This machine is substantially built and is especially adapted to tile and electrical porcelain manufacturers, where the clay to be pressed must be in dust form. It is built in two sizes.

Size	Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Capacity Per 10 Hours	H. P.
No. 1	1½ ft.	170 lbs.	250 lbs.	1½x2 ft.	4 x 4 in.	2,250	2 to 5 tons	5
No. 2	2½ ft.	500 lbs.	650 lbs.	2 x 3 ft.	7½ x 7½ in.	2,100	8 to 10 tons	10

PULVERIZER

STYLE A



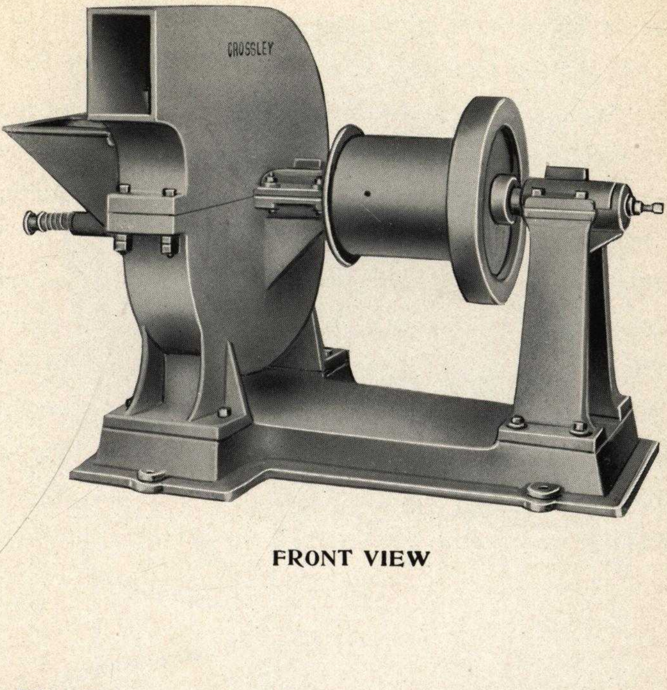
SIDE VIEW

This type of Pulverizer made in two sizes only.

Sizes	Weight	Export Weight	Height	Floor Space	Speed	Pulleys	H. P.
36 in.	1,900	2,300	4 ft.	4½ x 4½ ft.	1,200	12 x 12	12 H. P.
48 in.	2,600	3,000	4 ft. 8 in.	3 ft. 6 in. x 7 ft.	1,200	14 x 14 in.	15 H. P.

PULVERIZER

STYLE A

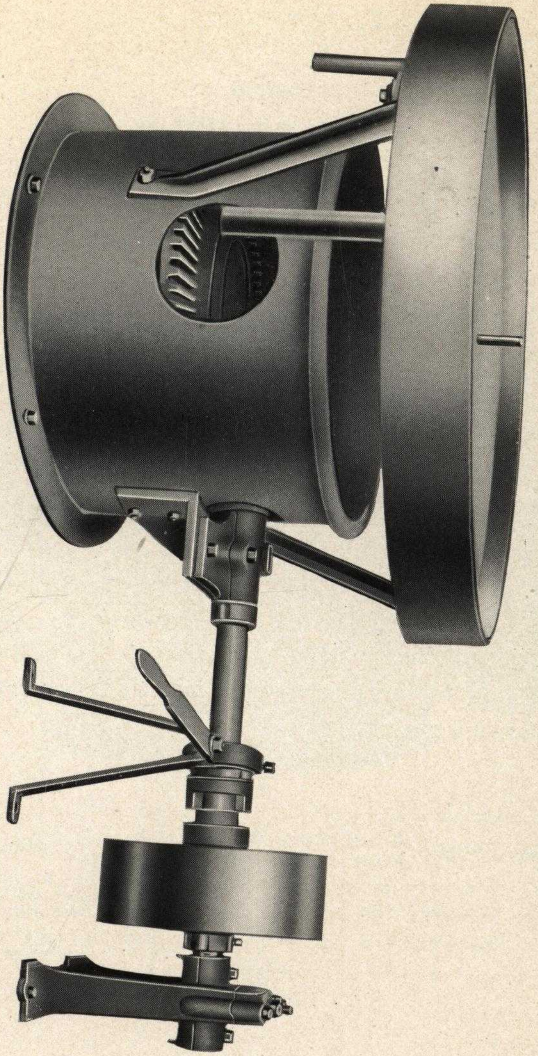


FRONT VIEW

This Pulverizer or Dust Blower is designed to meet the requirements of factories using a large quantity of material. This machine is made of the very best material and workmanship, equipped with large bearings and end adjustment. The spider is made of cast steel to which is fitted crucible steel plates, which are firmly bolted to spider. A large pulley and balance wheel is also supplied with this machine, which insures a perfect balanced running mill.

The greatest advantage in our Surface Grinder over all other makes on the market is the fact that the revolving table, on becoming worn, or the surface becoming irregular, it is not necessary to go to the great expense of having it faced off again. We have provided for this by having a light plate bolted to the table, which can be replaced when it is worn at a very small expense. There are a number of other improvements in this machine, for which we have not space to enumerate. The gearing is enclosed in the iron base of the machine, thus keeping all sand and grit from the working parts. It is used for grinding the surfaces of pieces of ware by means of the action of sand and water. There is a trough running around the table, which catches the sand and water as it runs off the table and delivers it to a receptacle placed under the outlet pipe. We build these machines in three sizes, of the following dimensions:

Size	Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Capacity	H. P.
3 ft.	3 ft.	1,000 lbs.	1,400	5 x 6 ft.	6 x 18 in	150		2½ H P.
4 ft.	About 3 ft.	About 1,250 lbs.	1,650	About 5 x 6 ft.	6 x 18 in.	About 150	Depends on size of ware	About 3
6 ft.	3 ft.	3,500 lbs.	3,900	7 x 7 ft.	8 x 24 in.	95	Depends on size of ware	4½



SURFACE GRINDER

Style B

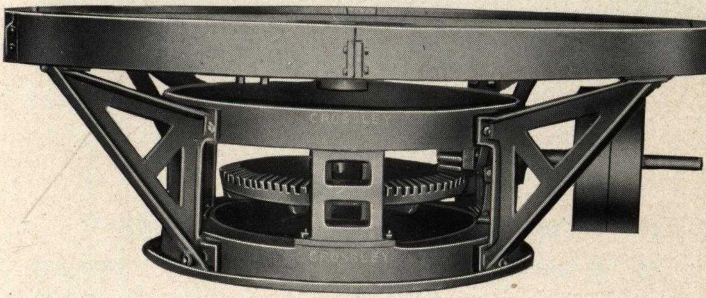
SAND GRINDER

A few advantages of this machine over any other make for this class of work are first the grinding plates and mud ring are made in six sections to facilitate the handling of same when necessary to true up face of plate. The edges of these plates are machined, thereby ensuring a perfectly tight joint and are securely bolted to a ready ribbed spider which is supported by a shaft 6½ inches in diameter with long bearings that are adjustable to wear. The bottom step bearing is made of the latest improved box type and is so arranged that you can readily remove the cast steel thrust pin which is 3½ inches in diameter without dismantling machine. This type of thrust bearing reduces the friction to a minimum. An inspection of this grinder will convince the most skeptical of the superiority of this make over any other. This grinder is made in the following sizes.

Size	Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed Runner wt.	Capacity	H. P.
8 in.	3 in.	6,000 lbs.	6,800	9′x9′	10″ x32″	60-Rev.	Depends on size of ware	10 H. P
10 in.	3 in.	14,000 lbs.	15,000	11′x11′	10″x30″	50-Rev.	Depends on size of ware	10-15 H.P.

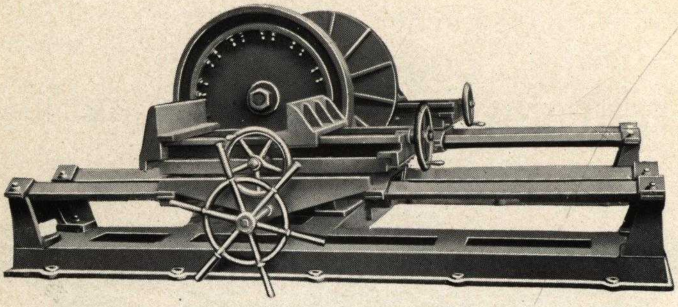
OUR IMPROVED
8 FEET AND 10 FEET SURFACE GRINDER

Style B



OUR IMPROVED 42-INCH GRINDER

STYLE A

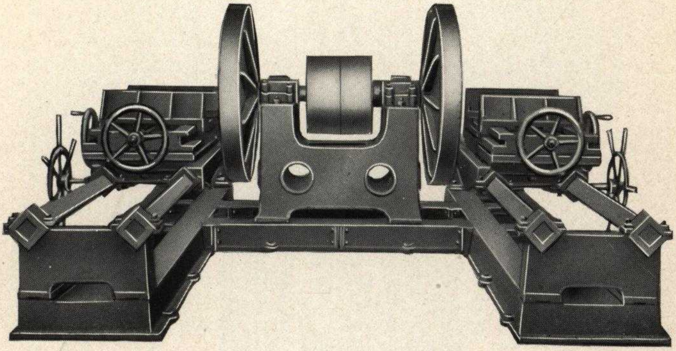


SIDE VIEW

This machine is used for grinding sanitary ware, such as lavatories, tanks, covers and slabs. This carriage is fitted with hardened roller bearings which enable the apparatus to move same easily ; the heads are made to hold the grinding stones which are made in sections. We make this machine either single or double as required.

OUR IMPROVED 42-INCH GRINDER

STYLE A

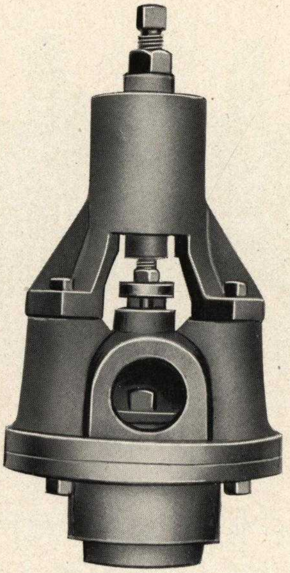


END VIEW

Prices and detail of this machine furnished on application. We make this machine in two styles A and B. Style B is made with low tracks for grinding heavy pieces.

Weight	Height	Export Weight	Floor Space	Speed	Pulleys	H. P.	
	5 ft.		10½x12 ft.	375	8½ x 20 in.	10	

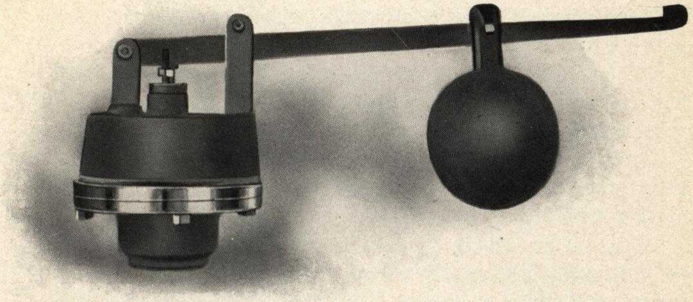
Our Improved Spring Overflow and Relief Valve



Parts carried in stock. Made in two sizes only, A and B.

	Weight	Export Weight	Size of Receiving and Discharge Pipes	Size of Brass Valve	Pressure
A	95 lbs.	150	2 inches	2 in. dia.	80 to 100
B	100 lbs.	150	2 inches	2⅝ in. dia.	80 to 100

OVER-FLOW OR RELIEF VALVE



This Safety Valve is especially designed for clay or heavy and gritty substances. The plunger and rings are made of brass with rubber seats. It is used in connection with our clay pumps for regulating the pressure of the liquid clay in the filter presses.

We make these safety valves in three sizes, of the following dimensions:

Size	Weight	Export Weight	Size of Receiving and Discharge Pipes	Range of Pressure
No. 1	25 pounds	50	¾-inch pipe	5 to 80 pounds
No. 2	35 pounds	150	1½-inch pipe	10 to 80 pounds
No. 3	85 pounds	150	2-inch pipe	20 to 80 pounds

HAND WHIRLERS

The Hand Whirlers shown on opposite page are made with the best materials and workmanship, and will be found to be well balanced and easily revolved. The step at bottom of spindle can be adjusted to allow for any wear that might occur in the spindle.

The Bench Whirler is fastened to a bench by means of wood screws, which hold it perfectly rigid and allow it to work freely.

The Sagger Maker's Whirler is, as its name implies, used for making saggers and other large articles, which require a very heavy and substantially built machine.

The Portable Bench Whirler is used on the bench, and can be moved from place to place, as required, being self-contained and requiring no outside support for the spindle.

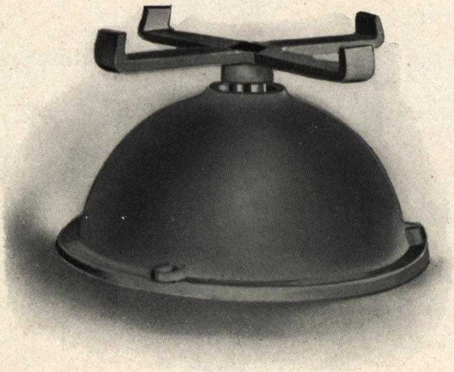
The bench whirler is built in two sizes, No. 1 and No. 2. The weight of No. 1 is 20 pounds, and its length over all is 20 inches. The weight of No. 2 is 30 pounds, and its length over all is 24 inches.

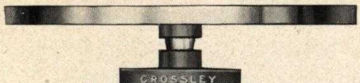
The sagger maker's whirler weighs 100 pounds, and its height is 30 inches, diameter of table is 23 inches.

The portable bench whirler weighs 23 pounds, and its height is 6 inches, diameter of base is 10 inches.

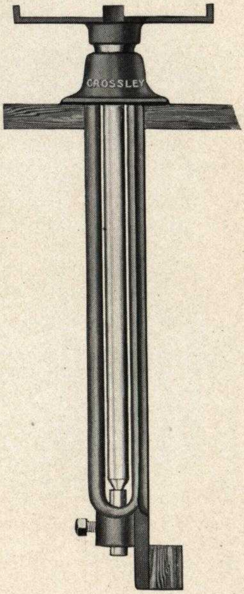
These whirlers are complete in every particular, and prices will be furnished upon application.

PORTABLE BENCH WHIRLER





SAGGER MAKER'S WHIRLER

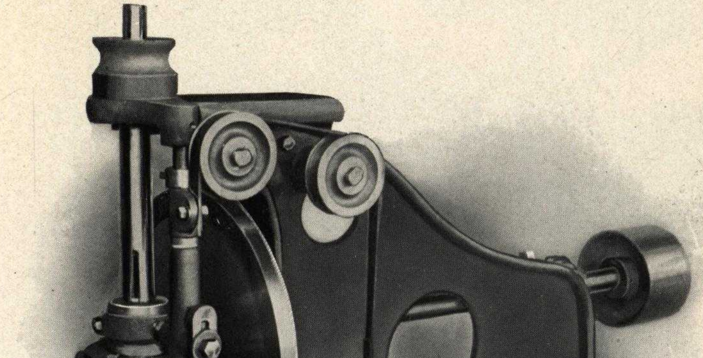


BENCH WHIRLER

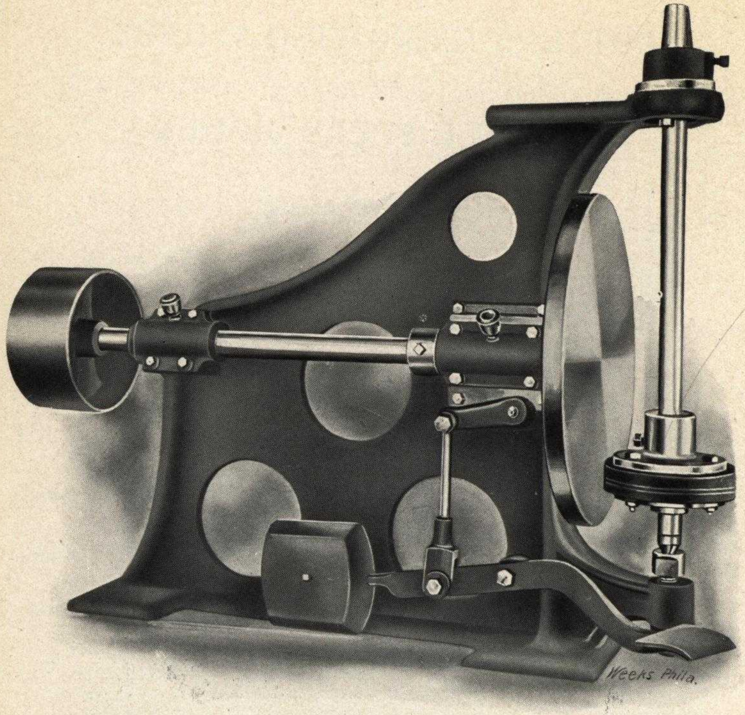
Our Thrower's Wheel is used for making cups, oyster bowls, and pieces which are usually made in this manner. It is also used extensively by emery wheel manufacturers. The speed-changing arrangement is very sensitive, requiring a very slight pressure of the foot to change the speed of the spindle, which feature is appreciated by the operator. There are a number of valuable improvements in this machine over the old-style throwing wheels, which will be apparent upon investigation. The dimensions are as follows:

Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	H. P.
3 feet	475 lbs.	525 lbs.	1½ x 3 feet	4½ x 9 in.	250	3

POTTERS' THROWING WHEEL
OR
VARIABLE SPEED JIGGER



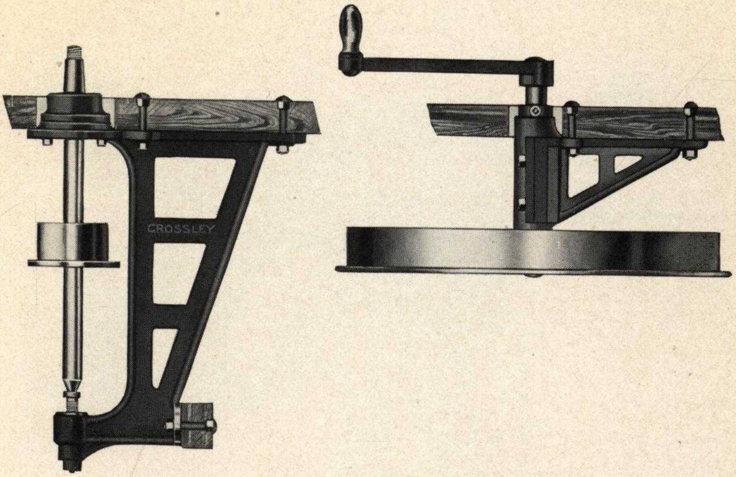
No. 1 JIGGER OR POTTERS' WHEEL


Weeks Phila.

The Jigger shown on this page is generally used in connection with one of our pull-downs, for making articles of clay formed by means of a profile or tool operated by the pull-down. It is a very well built and substantial machine, requiring very little expense to keep in repair, having few wearing parts. The advantages of this machine, as compared with other makes on the market, will be apparent to the operator. We can furnish any style or shape of head for this jigger to make any desired article. The dimensions are as follows:

Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	H. P.
3 feet	400 lbs.	600 lbs.	1½ x 3 feet	4½ x 9 in.	250	3

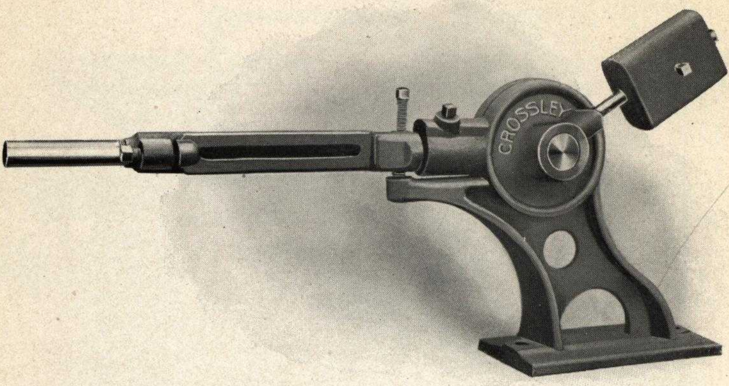
HAND JIGGER



This illustration shows our Hand Jigger, which is used where power is not available or when delicate work is being performed, requiring that the operator should use the utmost care. The spindle is very well balanced and runs absolutely true. This machine is very often used by moldmakers or others doing work of a similar character. It is fastened to a bench and operated by a boy or assistant by means of the hand-wheel or crank. We make this machine in one size only, of the following dimensions:

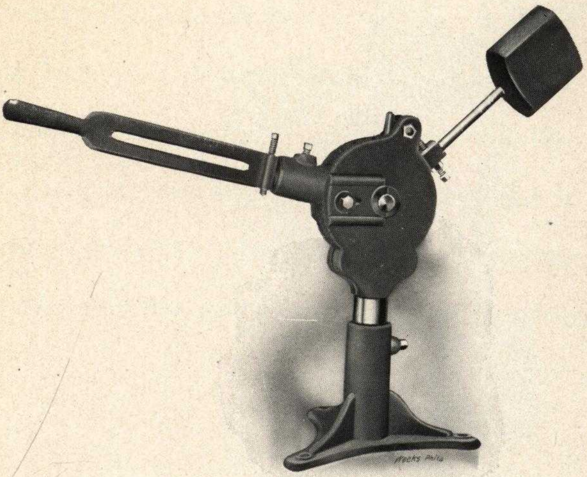
Height, over all, about 25 inches.
Weight, about 125 pounds.

Nos. 1 and 2 PULL-DOWN



This Pull-Down is made in two sizes, No. 1 and No. 2. The No. 1 is used for making cups, saucers, etc., the No. 2 is used for plates, bowls, etc. It is a simple, durable and quick-acting machine, being perfectly balanced by means of the weight placed on back of machine. The set-screw on tool holder adjusts the depth of tool to suit the piece being made. The tool holders are interchangeable, thereby assuring uniformity of ware. These pull-downs can be furnished connected with jiggers when desired. The weight of No. 1 machine is about 45 pounds, and the No. 2, 66 pounds.

No. 3 PULL-DOWN

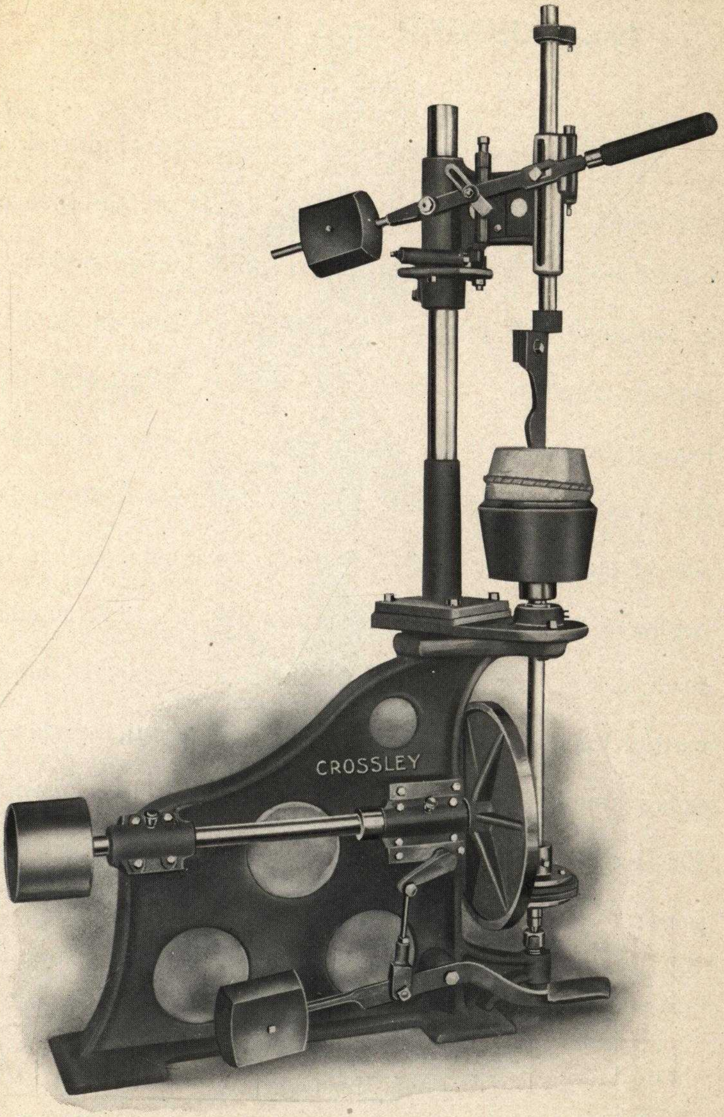


Our No. 3 Pull-Down is used for making chambers, bowls, large basins, etc. It is very easily operated and quickly adjusted to make a wide range of work. It can be furnished with an interchangeable tool holder when desired. This machine can be attached to our standard Jigger or be bolted to a bench. It is very well built and perfectly counterbalanced.

This cut shows our No. 4 Pull-Down and Jigger combined, which is used for making articles with narrow neck. It is very quickly and easily operated. The stops are provided with a spring cushion, which arrests the profile just before it comes to a full stop, thus preventing any tearing or jamming of the clay in the mold. There are other great improvements in this machine, which will be apparent at a glance.

Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Capacity	H. P.
6½ ft.	550 lbs.	700 lbs.	3 x 4 ft.	4½ x 7 in.	250	Depends on size of articles	3

No. 4 PULL-DOWN and JIGGER COMBINED

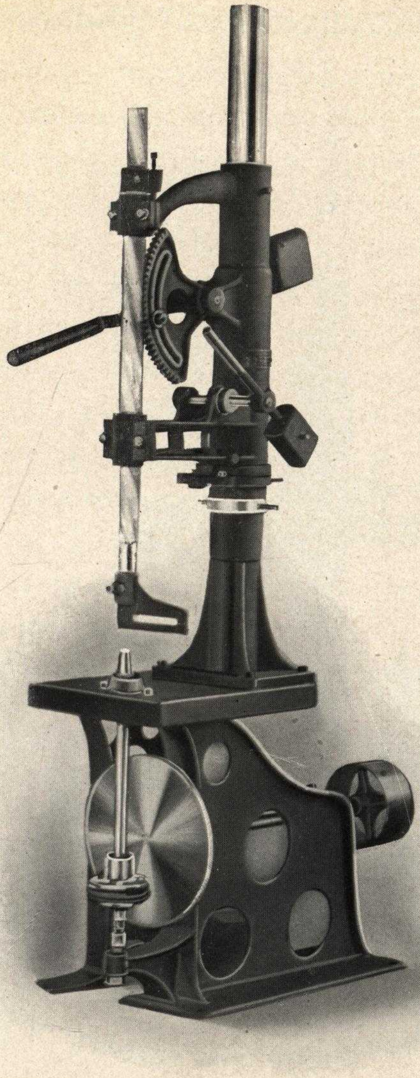


Description of No. 7 JIGGER and PULL-DOWN

This Pull-Down is self-contained and is used for making cuspidores, jardinieres and various kinds of narrow-neck bellied work. We furnish this pull-down either separately or combined with jigger. This machine is built in the best manner possible. In making a piece of ware, and after having the mold placed in position on the jigger head and the profile attached to the tool holder, the handle on left side of machine is pulled down until the profile reaches the bottom of the piece being made; then the right lever is pulled down toward the operator, which, being connected to the vertical column by cut-mitre gears, causes the profile to swing around and make the belly in the piece of ware. This machine is made in one size only, of the following dimensions:

Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Capacity	H. P.
7 ft.	About 750 lbs.	1000 lbs.	3 x 4 ft.	4½ x 7 in.	240	Depends on size of articles	3

No. 7 PULL-DOWN and JIGGER COMBINED



Description of Our No. 8 Jigger and Pull-down

This machine was designed for making jardinieres and pieces of similar proportions—will make either inside or outside work. Conveniently-arranged adjustments make it a practical and accurate machine, which can be operated with ease and rapidity. It is being successfully operated in a number of the largest potteries in this country. It combines all the principles of our three best pull-downs, having a vertical, a horizontal and a radial movement.

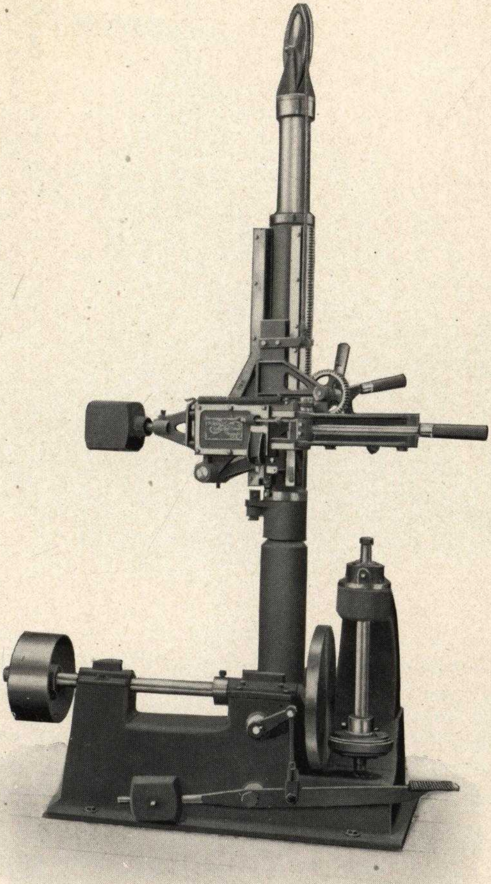
Size "A" will make bellied jardinieres up to 15 inches in diameter and 15 inches high. It is well adapted to making complete toilet sets. It will also make either inside or outside work.

Size "B" will make bellied jardinieres up to 20 inches in diameter and 20 inches high; also various kinds of either inside or outside work.

Size	Height	Weight	Export Weight	Floor Space	Vertical Movement	Horizontal movement	Driving Pulley	Speed	H. P.
A	7 ft.	850 lbs.	1,350	3 x 4 ft.	15 in.	3 in.	4 x 9 in.	250	5
B	9½ ft.	1,500 lbs.	2,000	3 x 5½ ft.	24 in.	3 in.	5¼ x 12 in.	200	6

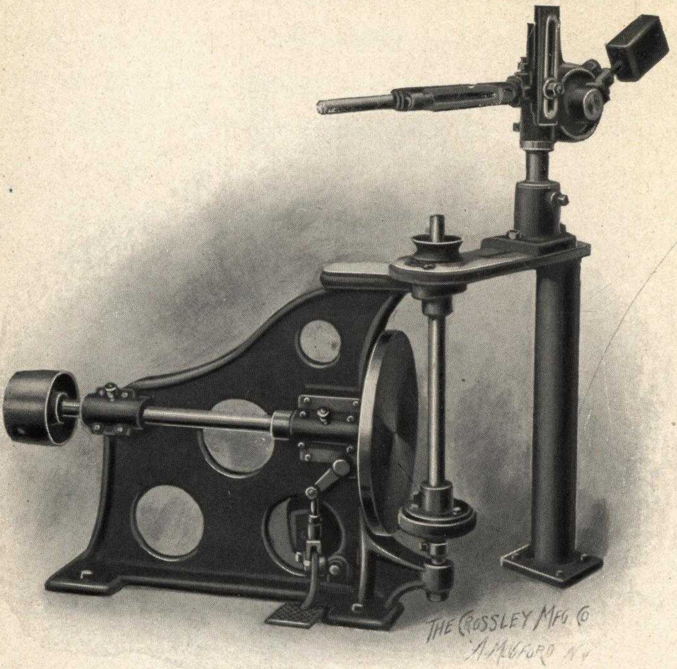
No. 8 PULL-DOWN and JIGGER COMBINED

(Style "B")



No. 5

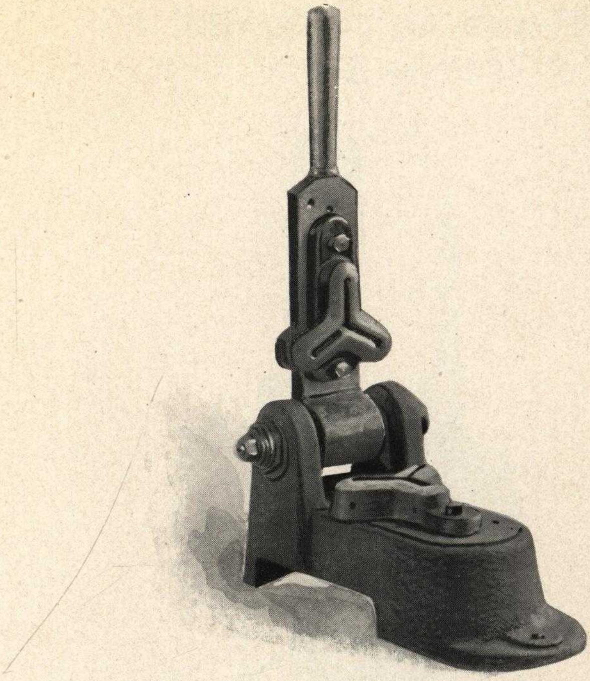
PULL-DOWN AND JIGGER COMBINED



This cut shows our No. 5 Adjustable Radius Pull-Down and Jigger combined, which is used for making articles with a rolled edge, such as plates, cups, saucers, bowls, butters and other articles of this character. This is the only pull-down on the market which will make rolled edge as well as plain work. It is very substantially built and easily operated, being well balanced. The dimensions are as follows:

Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	From Center of Spindle to Column	Top of Spindle to Arm	H.P.
4½ ft.	600 lbs.	800 lbs.	3x4 ft.	4½x7 in.	250	14½ in.	16½ in.	3

HAND STILT PRESS

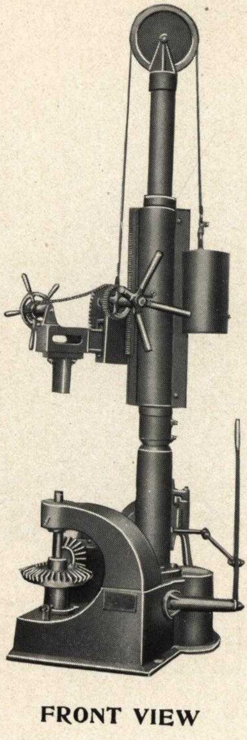


This Press is used for making stilts and pins, which are used for placing ware in kilns. The joints or knuckle is fitted with conical or taper steel pin, which makes it impossible to get out of line. It is a very well-built and accurate machine, easy to operate, being simple and having few working parts; it costs nothing to keep in repair. We can furnish any style die desired. This machine is made in two size only, of the following dimensions:

Weight, 75 pounds.
Height, 8 inches.
Floor space, 6 x 14 inches.

No. 8 CRUCIBLE PULL-DOWN AND JIG COMBINED

STYLE A

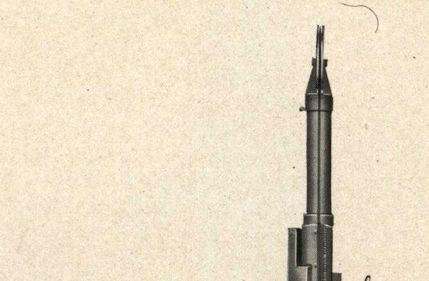


FRONT VIEW

Size	Height	Weight	Export Weight	Floor Space	Pulleys	Speed	Capacity	H. P.
A	9½ ft.	2,500 lbs.	3,000 lbs.	2½x4 in.	Cone 7 in. 10 in 12 in. dia.	Three Speeds	10 in dia. 15 in. high	5

No. 8 CRUCIBLE PULL-DOWN AND JIGGER COMBINED

STYLE A



SIDE VIEW

This Jigger and Pull-Down was designed for making Crucibles up to 10 in. diameter x 15 in. high.

STYLE A

This machine is designed and built for jiggering and forming large pieces, such as crucibles, retorts, etc.

Size "A" machine will make articles up to 10 inches in diameter and 15 inches high. (See illustration page 90.)

Size "B" machine will make pieces from 10 inches in diameter and 15 inches high, up to 30 inches in diameter and 30 inches high.

In starting to operate the machine, the vertical sliding head should be swung around to the right, having the profile sufficiently high to clear the top of the mold. The mold being placed in the jigger head, and the ball of clay thrown into the mold, the head is then swung around against a stop, this stop being adjusted so that the face of the profile is always in the center of the spindle; the machine is then started by means of the friction-clutch lever. The profile or tool is then brought down into the mold by turning the right-hand wheel. By turning the left-hand wheel the profile forces the clay against the interior of the mold. The piece being formed, the above operation is reversed, and the mold together with the piece made, is removed.

The machine is fastened or bolted to the floor. The pull-down is firmly fastened to the jigger base, making it a compact and rigid machine.

The speed is regulated by a cone-friction pulley, which is controlled by a lever attachment conveniently arranged.

The adjustable tool holder and arm are evenly balanced by a weight, and slides up and down the vertical column with ease. When a piece is finished, the base of the sleeve being fitted with ball bearings, a slight push with the hand will swing the arm around and make ample room for taking out and placing the mold.

Cut of Style A and Style B machines are shown on following pages.

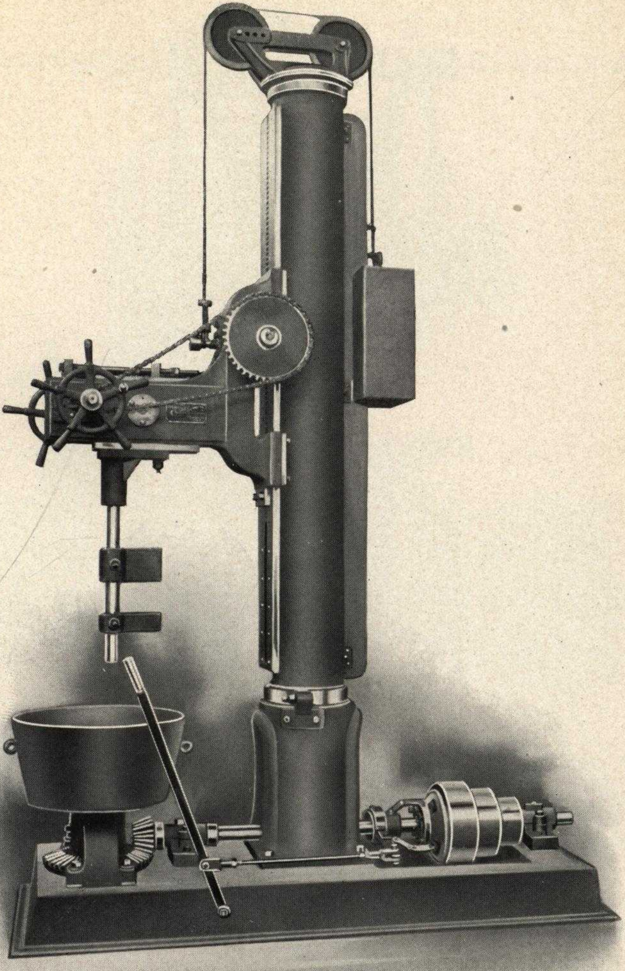
We have this machine in very successful operation in a number of the largest steel and crucible plants. It is made in two sizes, of the following dimensions:

Size	Height	Weight	Export Weight	Floor Space	Pulleys	Speed	Capacity	H. P.
A	9½ ft.	2,500 lbs	2,850 lbs.	2½x4 ft.	4 in. face 7, 10, 12 in. dia.	Three Speeds	10 in. dia 15 in. high	5
B	12 ft.	3,800 lbs.	4,350 lbs.	3x7 ft.	4 in. face 7, 10, 12 in. dia.	Three Speeds	30 in. dia. 30 in. high	8

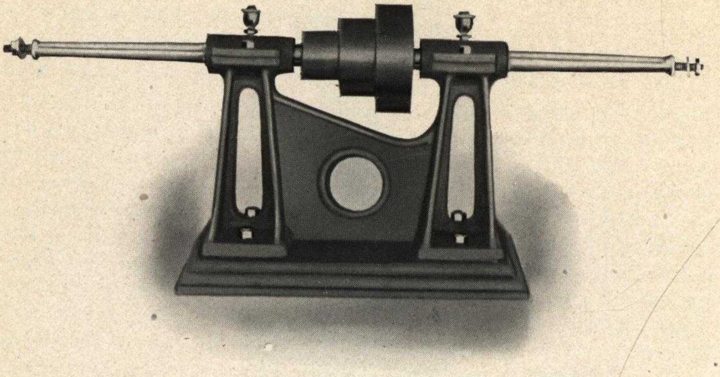
No. 9 PULL=DOWN and JIGGER COMBINED

(Crucible Machine)

STYLE B



POLISHING OR BUFFING MACHINE

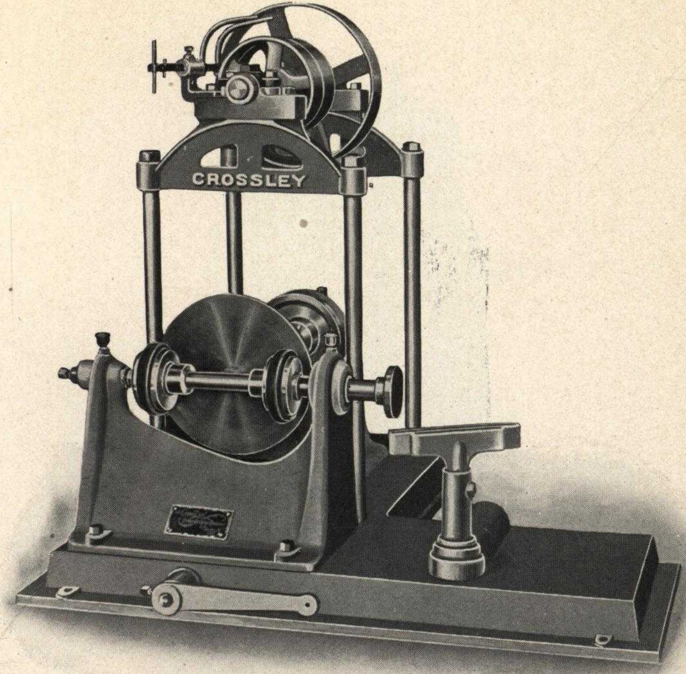


This machine is used for polishing or buffing articles, or grinding blisters and projections from ware. We furnish a counter-shaft with each machine. The spindle is perfectly balanced and revolves at a very high speed. It has a range of three speeds. The dimensions are as follows:

Height	Weight	Export Weight	Base	Speeds	H. P.
14 inches	85 pounds	150 lbs.	12 x 18 inches	3 speeds 1,700 down	1

STYLE A
TURNING LATHE

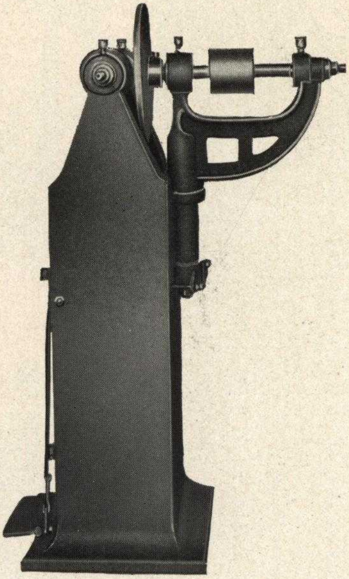
(For Bench)



Our turning Lathe for placing on a bench is self contained, with countershaft attached to the machine. It has a wide range of speeds, and by means of the treadle the direction of the spindle is instantly reversed from a forward to a backward motion.

Style	Height	Weight	Export Weight	Speed Counter	Size of Pulleys	Floor Space	H. P.
A	3½ feet	400 lbs.	575 lbs.	400	4½x12	3x3½ ft.	2

SIMPLEX TURNING LATHE

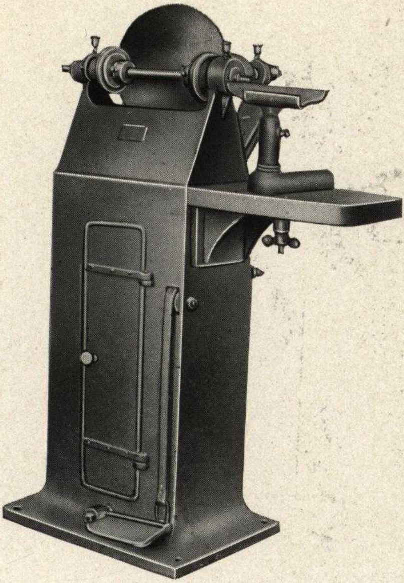


FRONT VIEW

This Lathe is furnished with bracket bolted to frame or without as desired.

Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Swing	H. P.
4½ ft.	517	650 lbs.	2 x 2½ ft.	4 in. x 4 in.	400	18 in.	2 H. P.

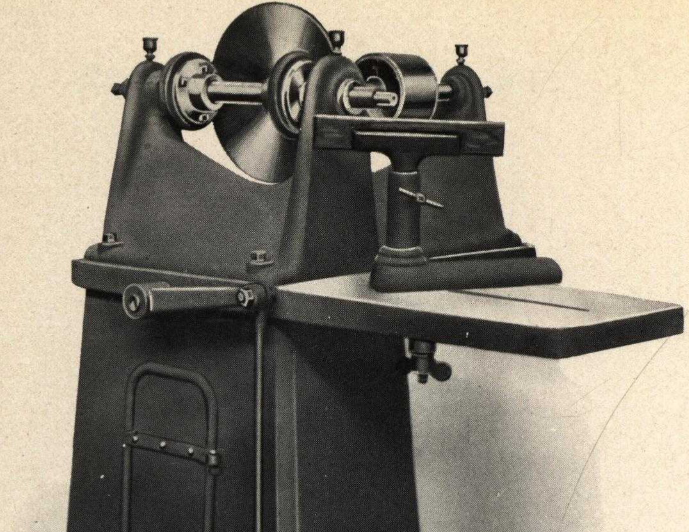
SIMPLEX TURNING LATHE



SIDE VIEW

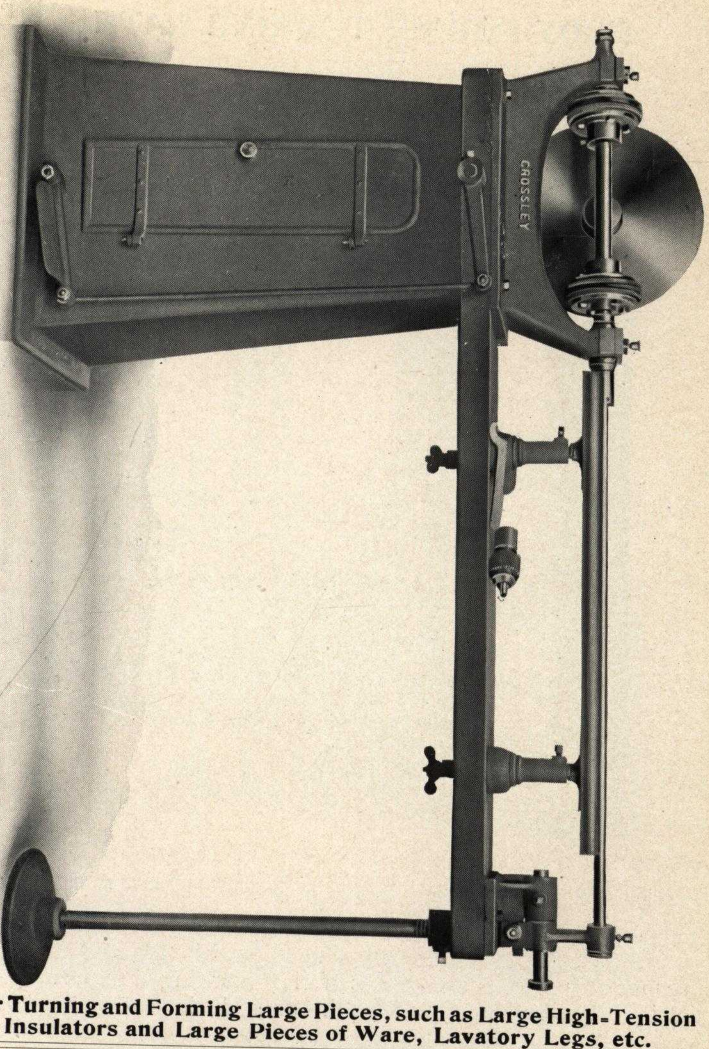
Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Swing	H. P.
4½ ft.	550 lbs.	700 lbs.	2 x 2½ ft.	4 x 4 in.	Variable	18 in.	2

Style B. TURNING LATHE (With Cabinet)



Style	Height	Weight	Export Weight	Speed Counter	Size of Pulleys	Floor Space	H.P.
B	4½ ft.	700 lbs.	900 lbs.	400	3″ x 6″	2 x 4½ ft.	2

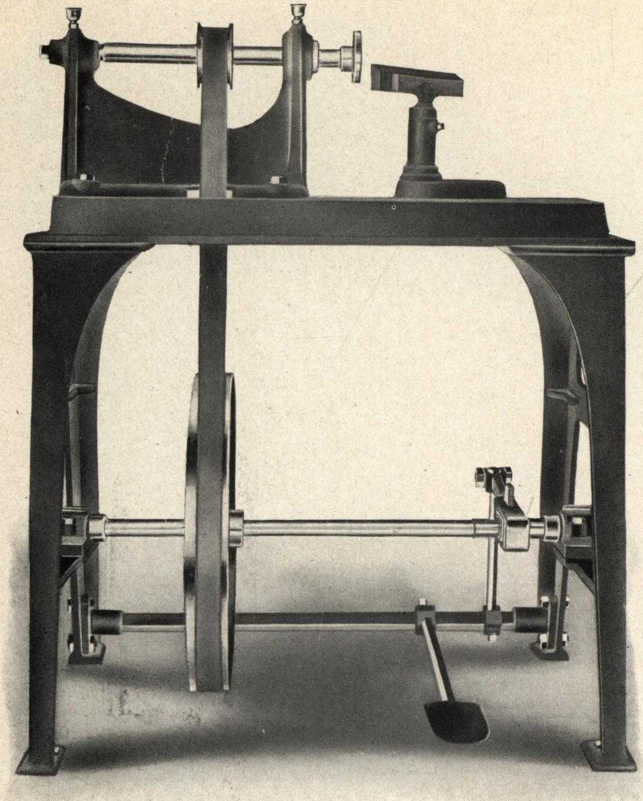
STYLE "C" TURNING LATHE



For Turning and Forming Large Pieces, such as Large High-Tension Insulators and Large Pieces of Ware, Lavatory Legs, etc.

Height	Weight	Export Weight	Floor Space	Driving Pulley	Speed	Swing	H. P.
4½ ft.	10.75 lbs.	1300 lbs.	2½x6 ft.	4x6 in.	500	18 in.	3

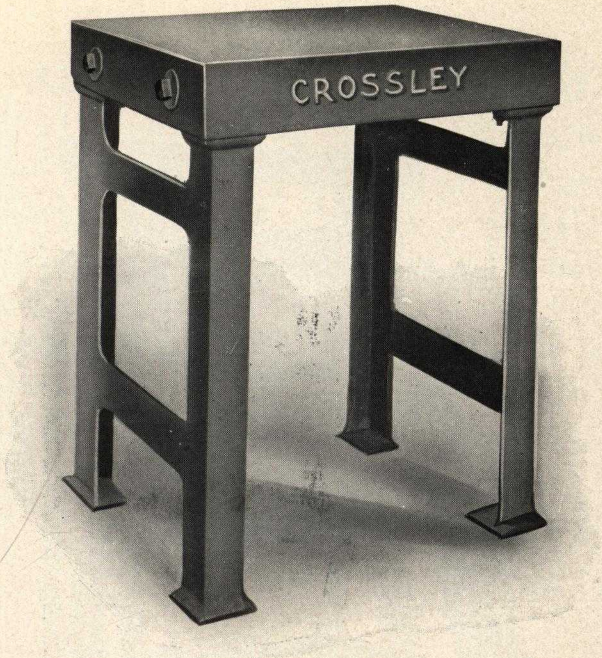
STYLE "D" FOOT-POWER TURNING LATHE



This Lathe is built for use where power is not available. It is especially adapted to schools of clay-working or experimental potting. It is well built, and requires very little power to operate.

Height	Weight	Export Weight	Floor Space	Swing
4½ feet	300 lbs.	450 lbs.	2 x 4½ feet	18 inches

STEAM STOVES

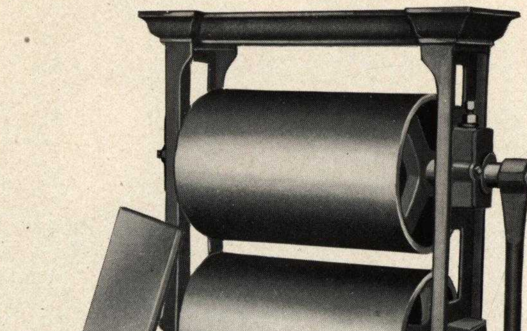


We make steam stoves and tables to suit any special needs of the decorator. Our standard Steam Stove, as shown on this page, is very well built, weighing about 250 pounds. The table is tested under pressure before it leaves our works. We build these stoves in several different sizes, which are constantly kept in stock. The standard table is 18 inches by 24 inches, and stands 30 inches high.

Weight, about 250 pounds.

Weight of double stove, about 450 pounds.

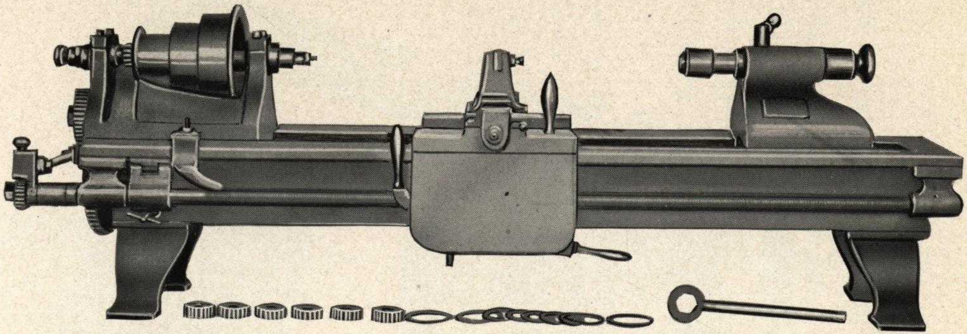
DECORATORS' PRINTING PRESS



Our Decorators' Printing Press is, no doubt, the best machine on the market. It is built with the very best materials and workmanship. The rollers are turned perfectly true, having our special bronze bearings, which insure durability, as well as smooth and easy running. This machine is furnished with standard size platen or table, and is built mechanically correct in every way. It is used for transferring designs from copper or steel plates to paper for decorating purposes in potteries, lamp works, etc. Write us for prices and further particulars.

Height	Weight	Export Weight	Floor Space	Size of Rolls
4 feet	425 pounds		2 x 2 feet	12 x 18 inches

JAR RING LATHE

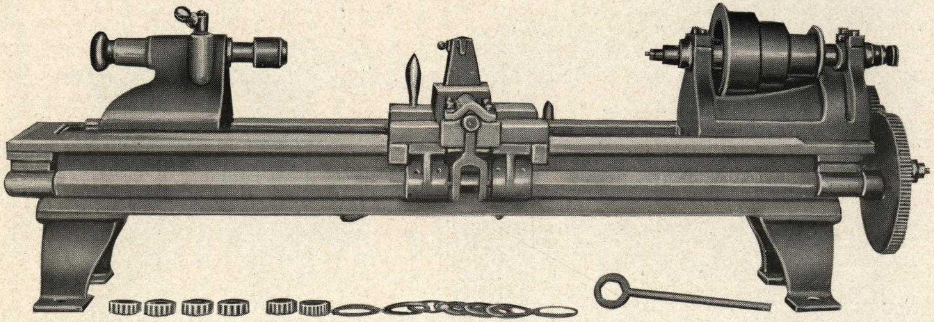


(FRONT VIEW)

This machine is built of the very best material and workmanship. The bearings are made of the very best bronze, the spindle is made of crucible steel as are the small gears, which are hardened. The tail stock is supplied with a hardened ball bearing. We use cut gears throughout and the machine is automatic in its operation.

OUR AUTOMATIC JAR RING LATHE

FOR CUTTING RUBBER JAR RINGS



(BACK VIEW)

One operator can operate two machines.

Height	Weight	Export Weight	Speed of Countershaft	Bench Space	Will cut from	Capacity per min.
20 in.	325 lbs.	375 lbs.	600 Rev. P. M.	1½ x 5 ft.	8 to 22 per inch.	1.10 Rings

No. 3 and 4
Single Compression Screw Press

The cut on the opposite page shows our new design of a No. 3 Single Compression Screw Press. There are several improvements on this machine that we desire to call to your attention, which we have made over the old style screw press.

One of the improvements is the construction of the treadle and lift up rod holder. This lift up rod holder is made in two parts. The reason we make this in two parts is to allow a lateral adjustment of the upper part of the treadle. This lateral adjustment is so that the operator, by slacking off the screw or nut, can bring the lift up rod holder in line with the lift up rod, in case the rod should be set out of center of the die. The lower part of the treadle has a vertical movement in a sleeve or base substantially bolted to base plate of press, which is planed or faced off so that the center line of treadle will line up perfectly with the center of screw and plunger or the upper part of press.

Another improvement we have is the construction of the plunger guide, which consists of an adjustable box that can be adjusted or brought up to the plunger as it wears, or in other words, by setting up the screws on the back part of plunger guide, the plunger can always be kept at perfect right angles with the bed of press.

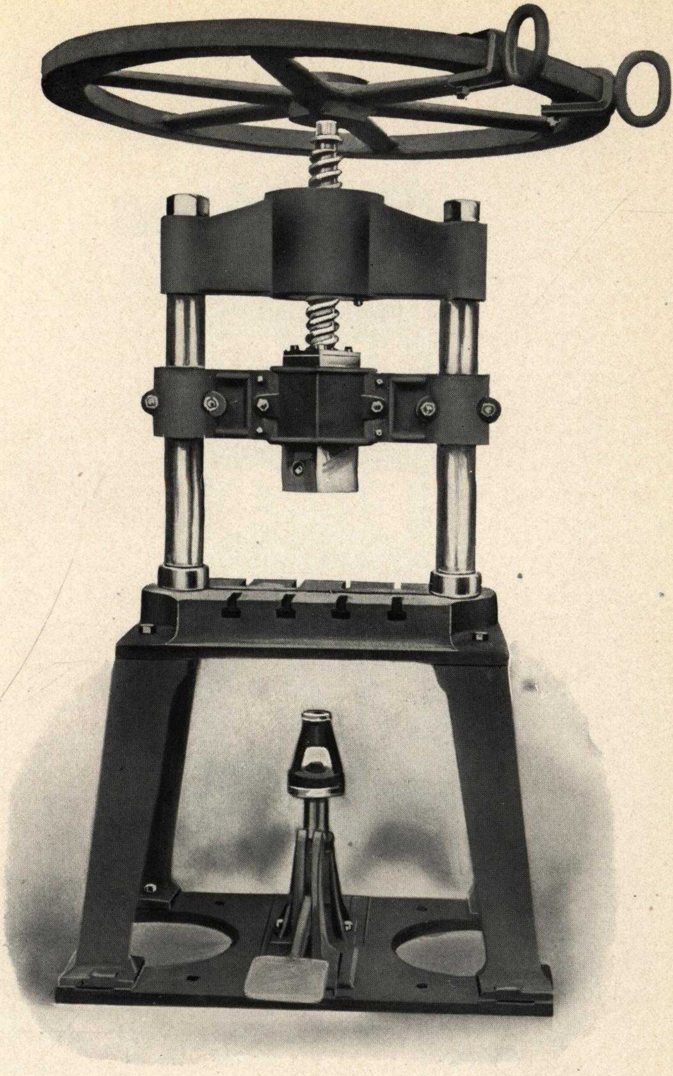
The screw is made of hammered steel working in a phosphorus bronze nut. The pitch of screw is made to suit the work required. What we mean by the pitch of the screw is that one revolution of the hand wheel moves the plunger 3 inches when the screw is cut 3 inch pitch or whatever pitch the screw may be cut, the movement will be according to pitch.

This machine is built of the heaviest construction to withstand the capacity of the press. The capacity of this press is from 12 inches down when making tile from moistened pulverized clay. When using plastic clay it requires less pressure, therefore the capacity would be larger.

The smaller size presses are made with a ball and lever.

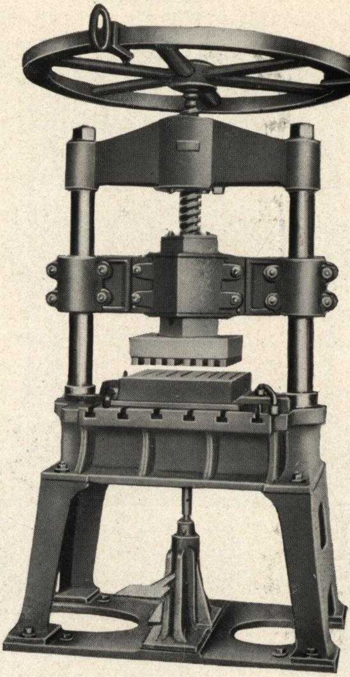
Size	Weight	Export Weight	Height	Distance between Columns	Floor Space
No. 3	2,400 lbs.	2,900	6 feet	20 inches	2⅓ x 3⅓ feet
No. 4	2,700 lbs.	3,200	6 feet	28 inches	2½ x 3½ feet

No. 3 Standard Single Compression Screw Press



No.	Height	Weight	Export Weight	Distance Bet. Col.	Floor Space	Diameter of Wheel
3	6 feet	1,600 lbs.	1,900 lbs.	20 inches	2⅓x3⅓ feet	4 or 5 feet
4	6 feet	1,900 lbs.	2,200 lbs.	28 inches	2½x3½ feet	5 or 6 feet

No. 4 CERAMIC TILE PRESS

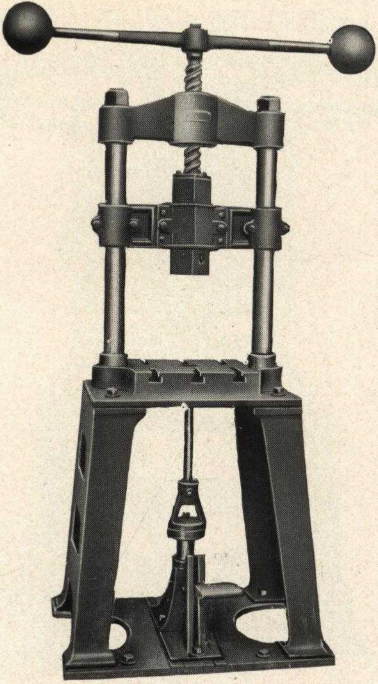


This style press made in one size only, will make 1.00-¾ inch round or square floor tile at one operation also can be used for making large size tile of any descriptions.

Size	Weight Net	Export Weight	Height	Distance Between Columns	Floor Space
No. 4	1,700	2,000	6 feet	28 inches	2½ x 3½ feet

OUR SINGLE COMPRESSION SCREW PRESS

This type of press is operated with lever.



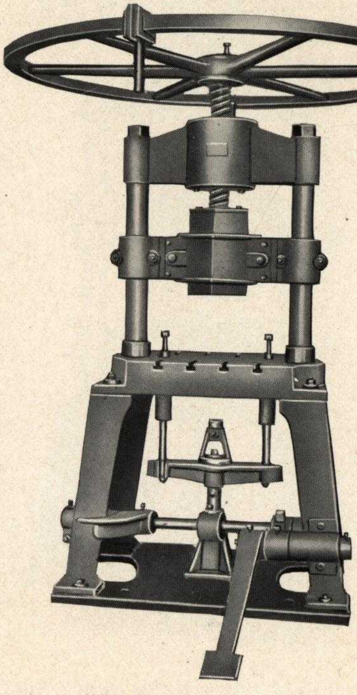
This Style Press is Made in the Following Sizes

No.	Height	Net Weight	Export Weight	Floor Space	Distance Between Columns	
0	4½ feet	700 lbs.	850 lbs	2 x 2 ft.	10 inches	
1	5 feet	1,000 lbs.	1,175 lbs.	2 ft. 6″ x 2 ft. 6″	12 inches	
2	6 feet	1,360 lbs.	1,575 lbs.	2 ft. 6″ x 2 ft. 9″	15 inches	

Style A

No. 3 Extra Heavy Press

Designed for Wall or Ceramic tiles with sliding case or moving Bottom Plunger.



Made in one size only.

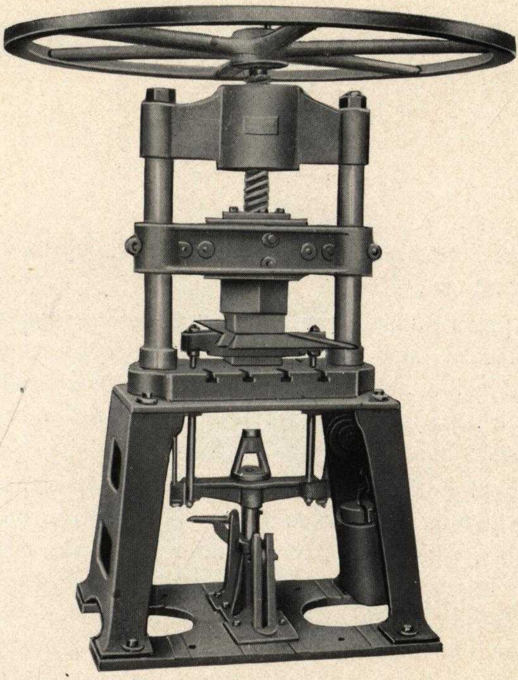
This Press is operated with two treadles.

Size	Weight	Net Wt.	Export Weight	Distance Bet. Columns	Floor Space
No. 3	6 ft. 6 in.	2,500	2,800	20 in.	2½x3½ ft.

Style B.

No. 3 Extra Heavy Press

Designed for Wall or Ceramic Tiles with sliding case
or moving Bottom Plunger.



Made in one size only.

This Press is operated with a treadle, it being so constructed that upon releasing treadle the case is brought in position ready for filling by the aid of counterbalance weights, operates on ball bearings which makes same very sensitive and easily operated.

Size	Weight	Export Weight	Distance Bet. Columns	Floor Space
3	2,300	2,600	20 in.	2½ x 3½ ft.

DOUBLE COMPRESSION SCREW PRESS

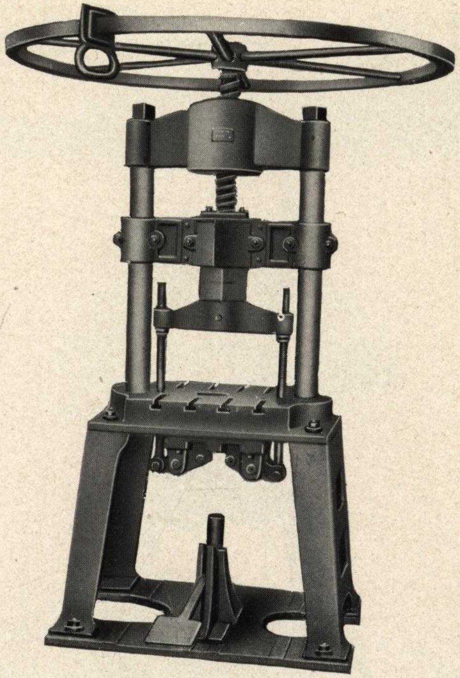
A short description of our Double Compression Screw Press and its use.

This press is made under the "Crossley Patent" and is used for making any article requiring an equal pressure from above and below at the same time, i. e., insulators that are pressed with the groove complete at one operation or any piece that has sides holes.

You will notice a cross bar attached to upper plunger through which two sides rods pass. These rods are connected to knuckles, which are placed under the bed of press, and when the upper plunger comes in contact with the adjusting nuts on side rods the knuckles press the lower plunger up, thus giving you the double compression. By moving the nuts on side rods you are enabled to exert the pressure on bottom plunger at any given point.

This press can be used either as a double compression or single compression press, by removing side rods you will have a single compression press.

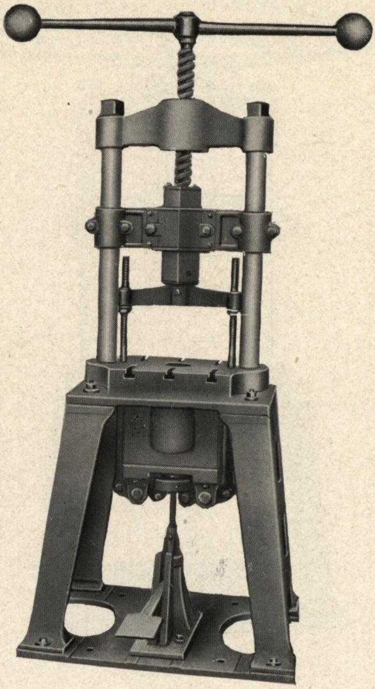
OUR No. 3 DOUBLE COMPRESSION SCREW PRESS FOR HEAVY DUTY



This Style Press Made in the Following Sizes

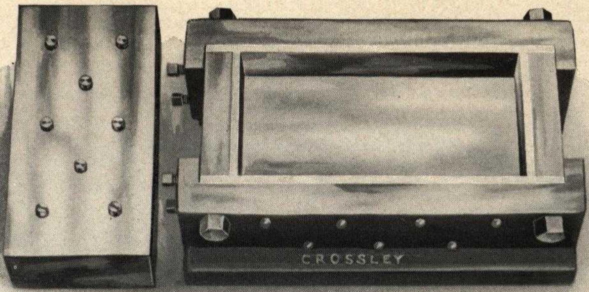
No	Height	Weight about	Export Weight about	Distance bet. Columns	Floor Space	Diameter of Wheel
3	6 feet	1,600	1,900	20 inches	2 ft. 4″ x 3 ft. 4″	4 ft. or 5 ft.
4	6 feet	1,900	2,200	28 inches	2 ft. 6″ x 3 ft. 6″	5 ft. or 6 ft

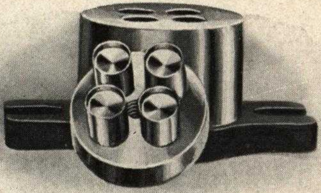
No. 2 DOUBLE COMPRESSION SCREW PRESS

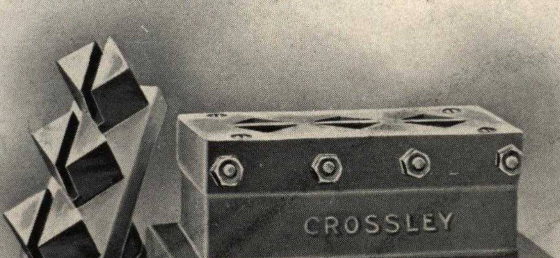


This Style Press Made in Two Sizes

Sizes	Height	Weight	Export Weight	Floor Space	Distance between Columns	Size of Lever
1	5 ft.	1200	1,500	2 ft. 6 in. x 2 ft. 6 in.	12 in.	36 in. long
2	6 ft.	1700	2,000	2 ft. 6 in. x 2 ft. 9 in.	15 in.	48 in. long

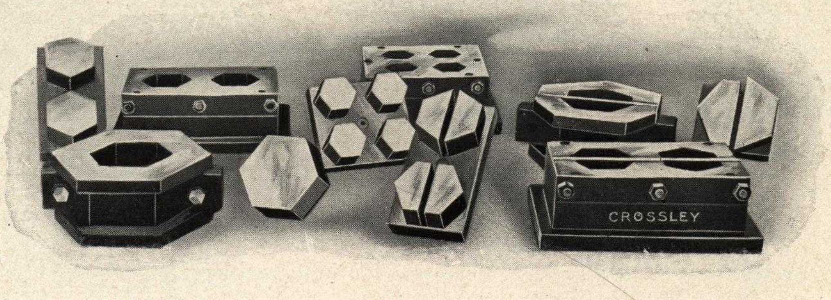

CROSSLEY



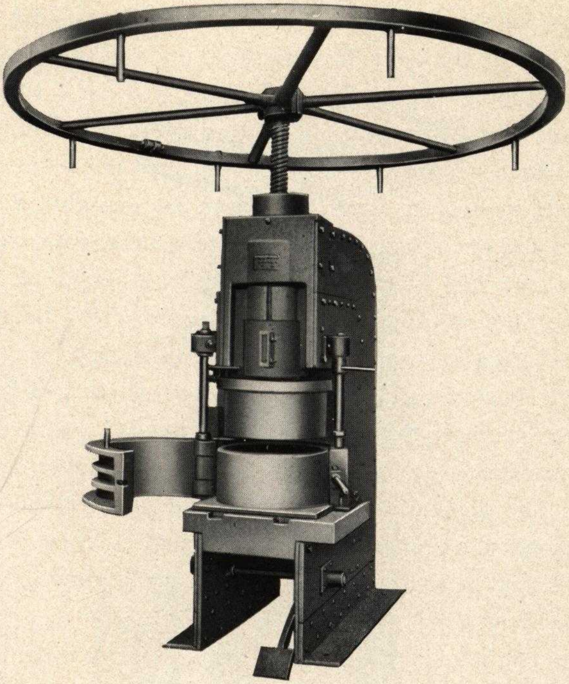

CROSSLEY

DIES AND MOLDS

We manufacture dies for all purposes and to make any particular shapes, employing only the most skilled mechanics on this class of work. We are glad at all times to submit drawings and photos and quote prices on any requirement upon request.



No. 5. SAGGER PRESS.



This Sagger Press will make Sagger up to 24 in. diameter x 12 in. height. The housings are made of heavy flanged steel.

No.	Height	Net Weight	Export Weight	Distance between Columns.	Floor Space	Capacity
5	11 ft.			36	3" x 3½"	200 to 300

No. 4. SAGGER PRESS.

(Oblong Die and Press illustrated on Page 120.)

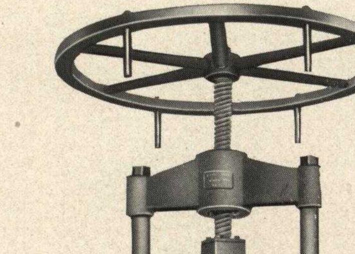
This machine was designed especially for making saggers and is built of the very best material and workmanship and is strictly a high grade machine in every particular. It has been a winner from the start, doing the work much better and cheaper than hand made saggers. It does not require skilled workmen to operate same, as it can be operated with two laborers and one strong boy. They can make from 600 to 800 saggers per ten hours, according to the height of saggers. We guarantee to make any size sagger given below at a manufacturing cost of less than one cent each.

This machine is placed in a pit about three feet deep, the man who operates the die remains in the pit, one man at the wheel and the boy to carry away the finished saggers to drying room. The saggers are made from one piece of clay cut at the pug mill the proper weight, the operator then places the piece of clay in die, it is then pressed and removed to drying room by boy.

You can readily see that this a very simple operation. We have these presses in operation in a large number of pottery, tile and electric porcelain plants and they are giving perfect satisfaction. You can make the different heights by placing a ring on plunger to give you the required height.

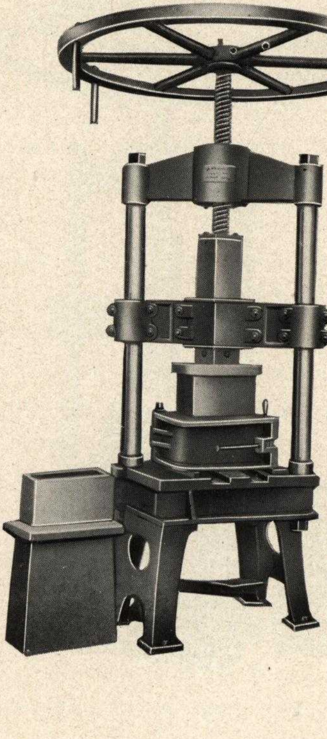
Oblong	Round		Oval
	Diameter	Height	
12¾″ x 8″ x 8″	14″	8″	15″ x 12″ x 6½″
13¼″ x 10″ x 8″	12″	8″	15″ x 12″ x 8″
14″ x 9″ x 8″	11″	8″	
13″ x 8″ x 8″	10″		
15⅜″ x 8″ x 8″			

No. 4 SAGGER PRESS
WITH
ROUND DIE



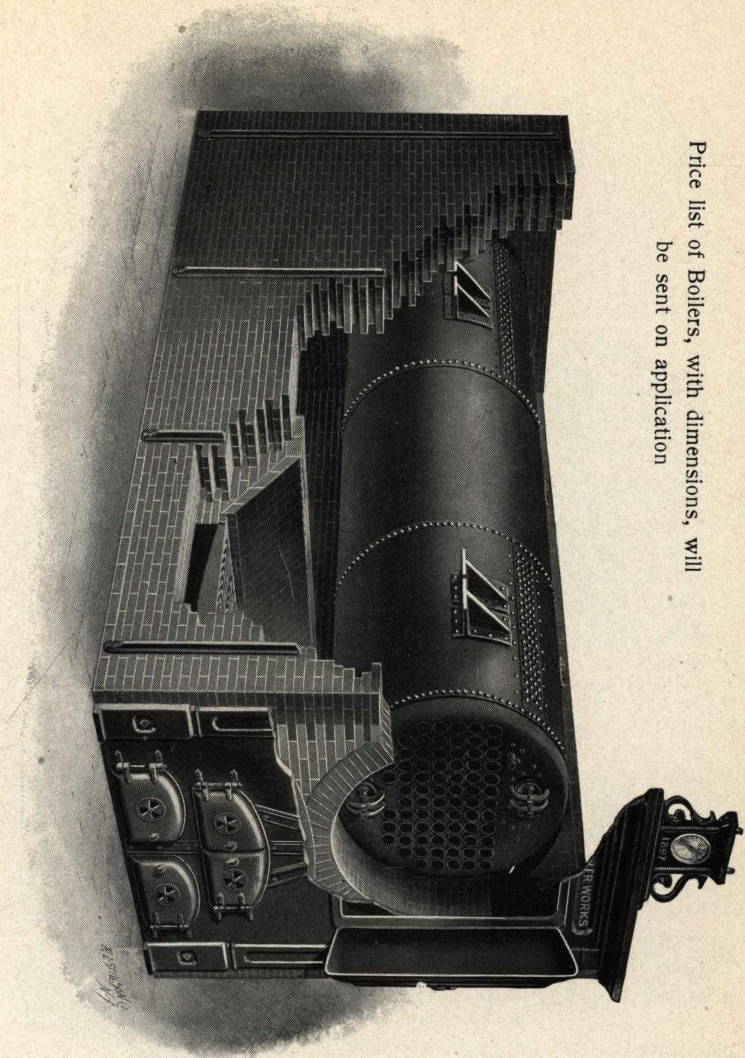
No. 4	Height	Shipping Weight	Export Weight	Distance Between Columns	Floor Space	Capacity
	9½ ft.	4,000 lbs.	4,500 lbs.	28″	2½ x 3	600 to 800

No. 4. SAGGER PRESS
WITH
OBLONG DIE



No.	Height	Shipping Weight	Export Weight	Distance Between Columns	Floor Space	Capacity
4	9 ft. 6 in.	4,000 lbs.	4,500	28 in.	2 ft. 6″ x 3″	600 to 800

STEAM BOILERS



Price list of Boilers, with dimensions, will be sent on application

We are prepared to furnish any standard size of Boiler promptly

IMPROVED SHAKING GRATE

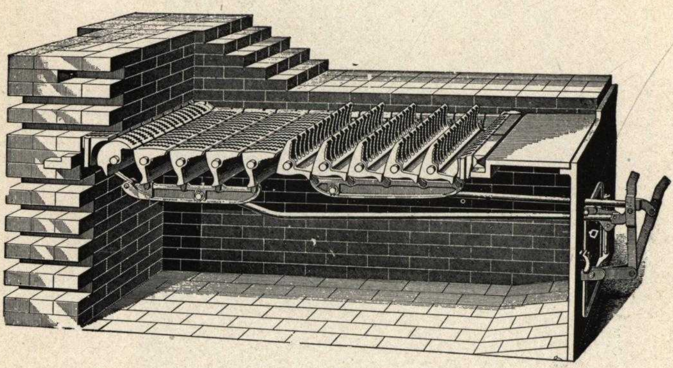
and

STEAM BLOWER

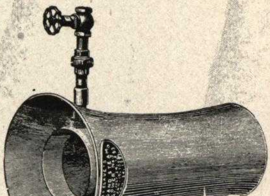
Which Insures Perfect Combustion

and

Large Saving in Fuel

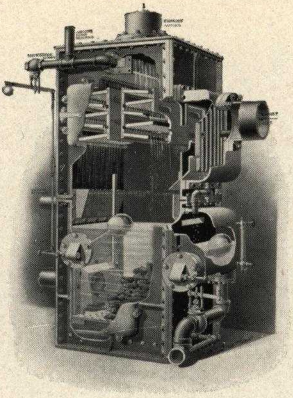


This means reduction in cost of operation. No waste fuel through combustion, removal of fine ashes, cleaning uniformly, gets rid of clinkers without opening fire doors.



Argand Steam Blower

THE COCHRANE FEED WATER HEATER



Interior view of the Cochrane Heater and Purifier, for use in connection with engines or pumps exhausting freely to the atmosphere, or against back pressure up to 10 lbs.

The Cochrane Open Heater utilizes the exhaust steam to heat all the boiler feed water up to boiling point. This saves 16% of the coal bill, and protects the boilers against injury from cold feed.

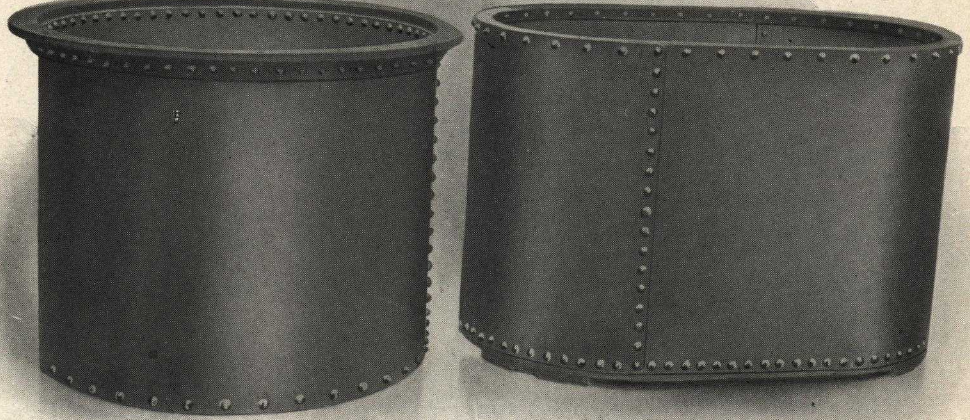
The virtual steaming capacity of the boiler is increased in the same proportion, that is, six boilers and a Cochrane Heater will make as much steam as seven boilers fed with cold water. In other words, the installation of a Cochrane Heater gives you more steaming capacity if required, or makes possible the laying off of one of the present boilers for cleaning while keeping up the steam output.

The steam consumed in heating the feed water in a Cochrane Heater is condensed and added to it, thereby reducing the water bill by about one-sixth. The heater also serves as a hot well or receptacle for live steam drips or other water about the plant suitable for boiler feeding.

Cochrane Open Feed Water Heaters are substantially built of heavily ribbed cast-iron; fittings of brass, bronze or copper. Convenient doors are provided for removing the filtering material and for cleaning the heater. There are no troublesome internal compartments.

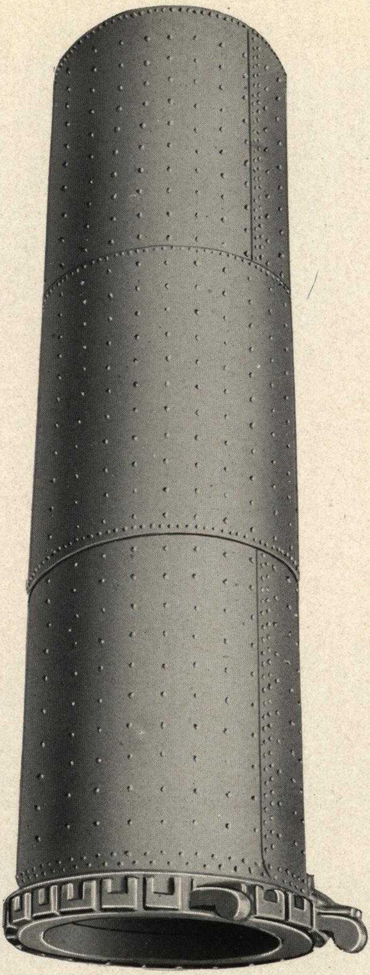
The water is heated by immediate, actual contact with the steam and neither the capacity nor the temperature to which the water is heated are affected by scale-forming matter in the water, that is, the full temperature of 210° F. is obtained as long as there is sufficient steam.

As no part of the heater is subject to boiler pressure, leakage does not occur. These heaters are widely used for heating water for industrial purposes in paper mills, pulp mills, textile mills, as well as for boiler feeding. Write for our treatise on the "Profitable Utilization of Exhaust Steam."



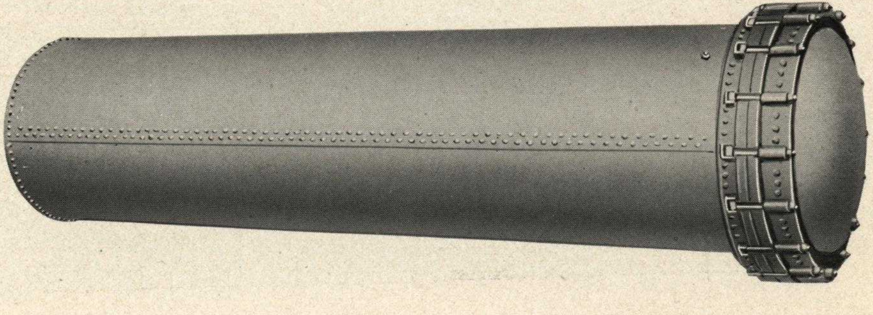
We are prepared to build all sizes and shapes of Steel or Iron Tanks and Cylinders at moderate prices. Our sheet metal department is well equipped with all modern apparatus, such as compressed air and Hydraulic riveters and tools, and pneumatic machinery, etc., which are essential to a modern, well-equipped plant. We employ only the best skilled labor and use the highest grade materials obtainable, which fact, together with our long experience in this line, is sufficient assurance of good work. Let us figure on your requirements.

THIS IS OUR DOUBLE JACKETED VULCANIZER



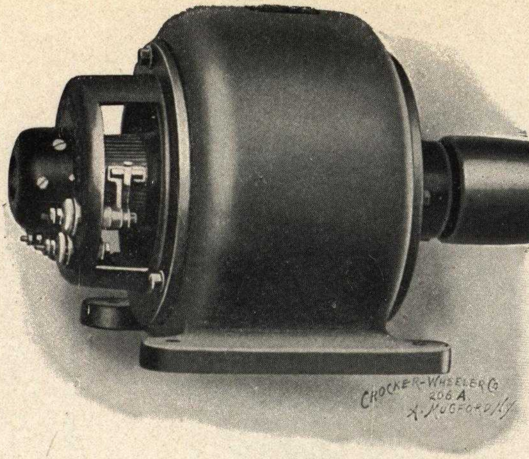
Let Us Have Your **Inquiries.**

THIS IS OUR STANDARD VULCANIZER

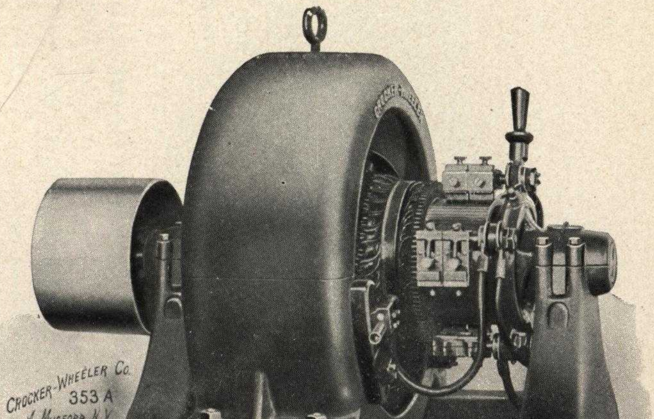


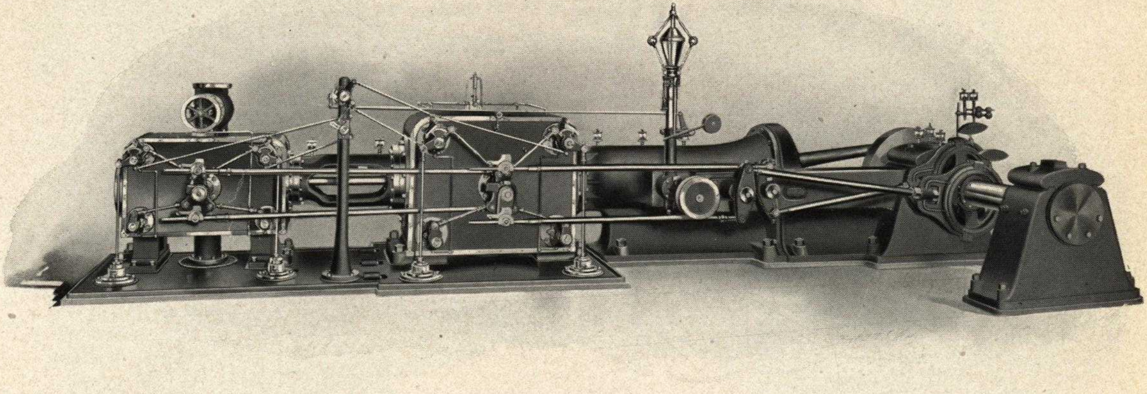
We make this style in any size to suit the trade. Kindly let us figure on your next requirements.

ELECTRIC GENERATORS AND MOTORS



We can furnish Electric Motor Drive for any of our machines when desired, including necessary brackets or attachments, and we shall be pleased to quote upon Electric Motors or Generators to suit all purposes of the clay worker.



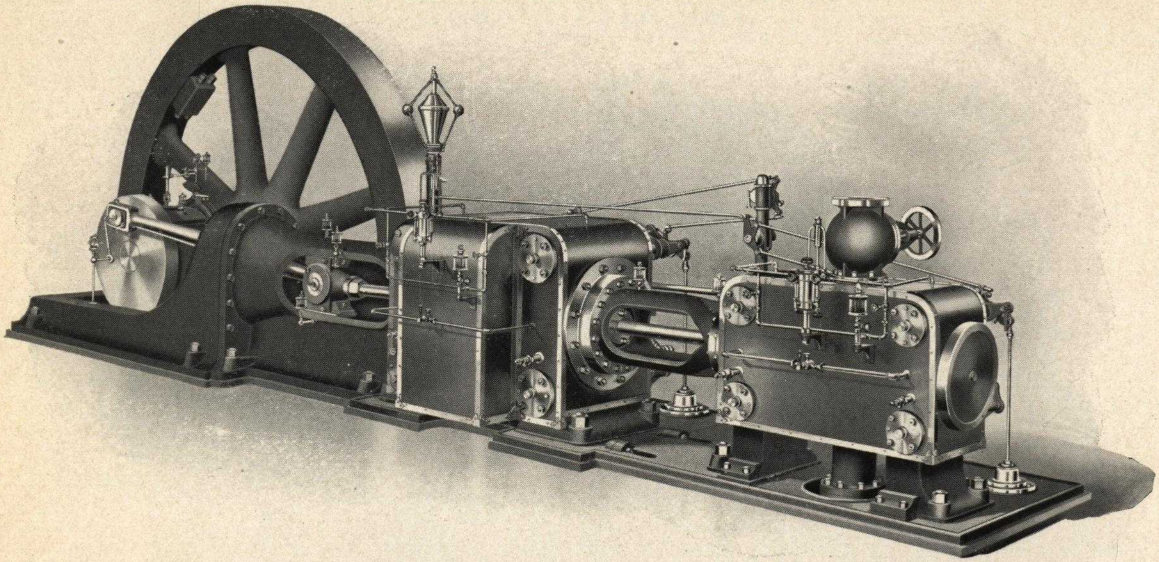


(VALVE GEAR SIDE)

Tandem Compound Corliss Engine

Heavy-duty, Tangye Type.

Equipped with Franklin Patent High-Speed Horizontal Gravity Releasing Valve Gear.



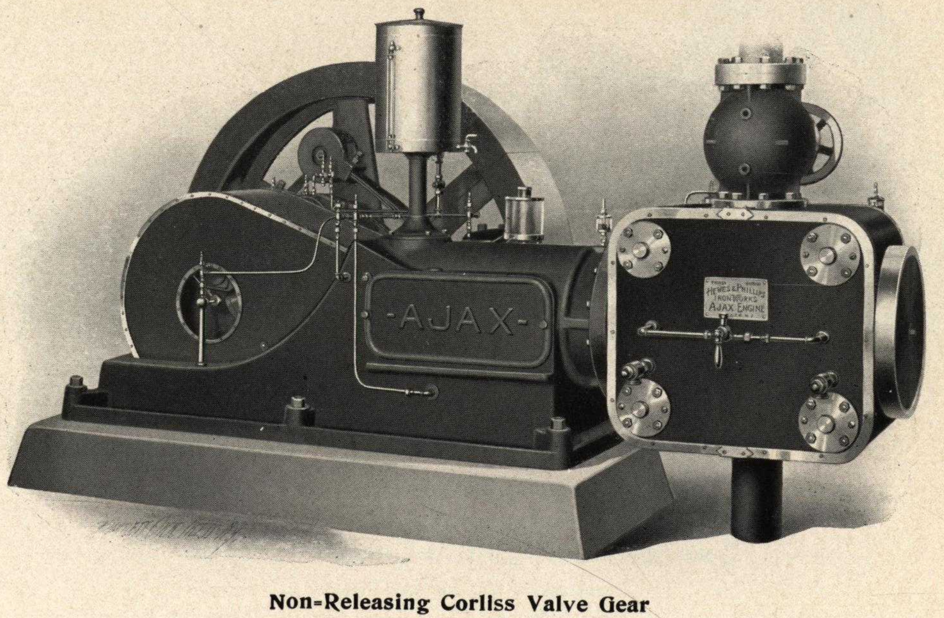
(CROSS HEAD SIDE)

Tandem Compound Corliss Engine

Heavy-duty, Tangye Type.

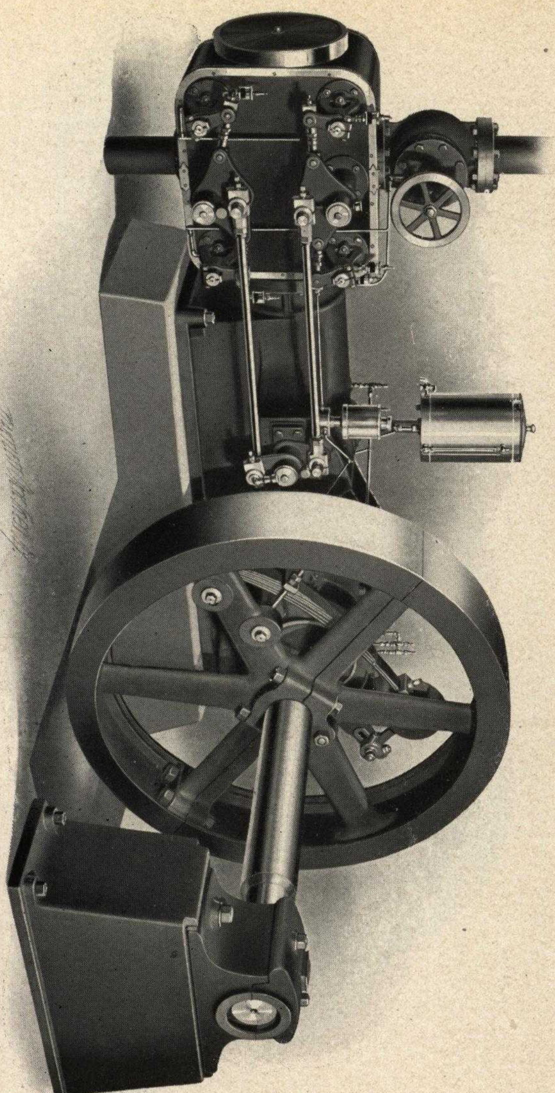
Equipped with Franklin Patent High-speed Horizontal Gravity Releasing Valve Gear.

THE AJAX ENGINE



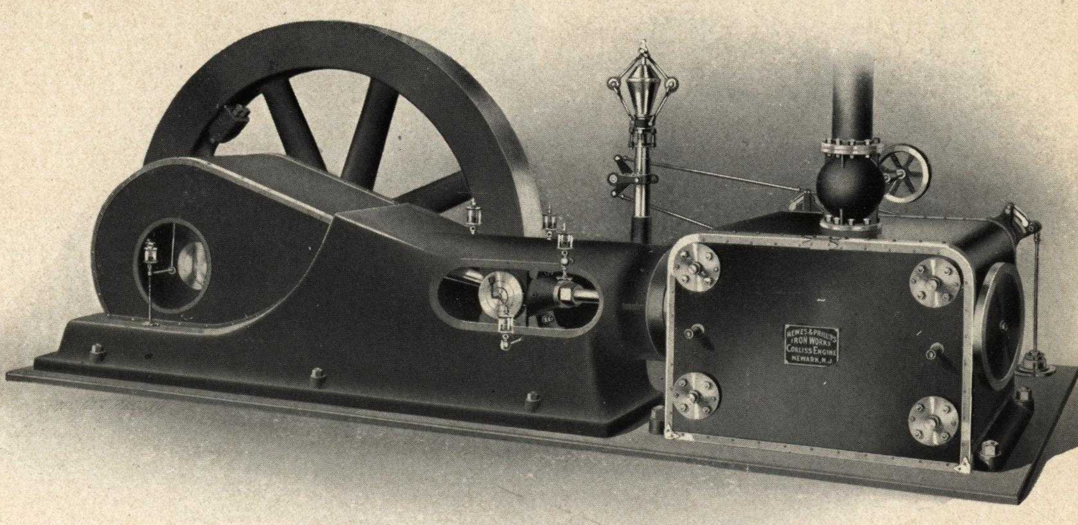
Non-Releasing Corliss Valve Gear
Crosshead Side

THE AJAX ENGINE



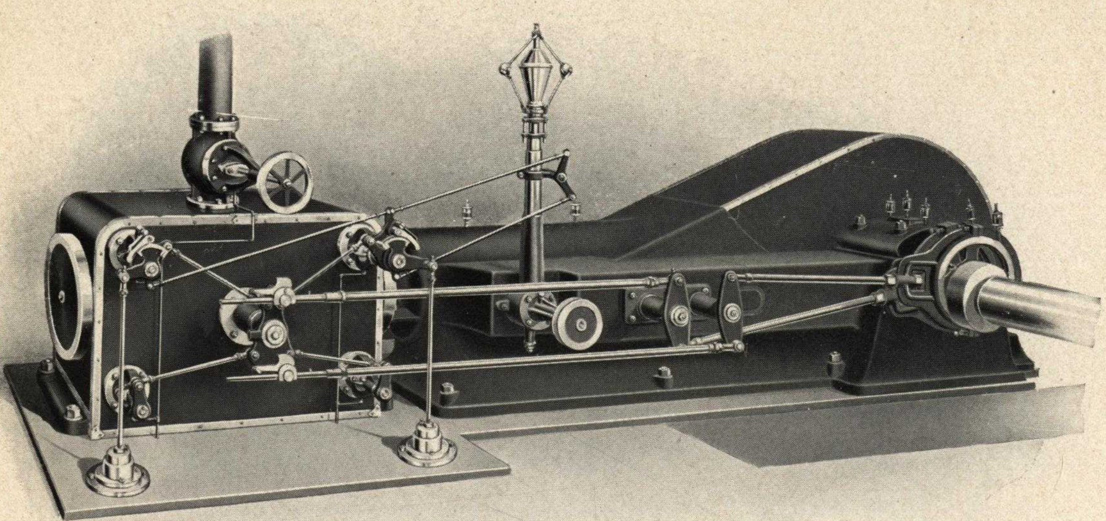
Non-Releasing Corliss Valve Gear
Valve Gear Side

FRANKLIN ENGINE



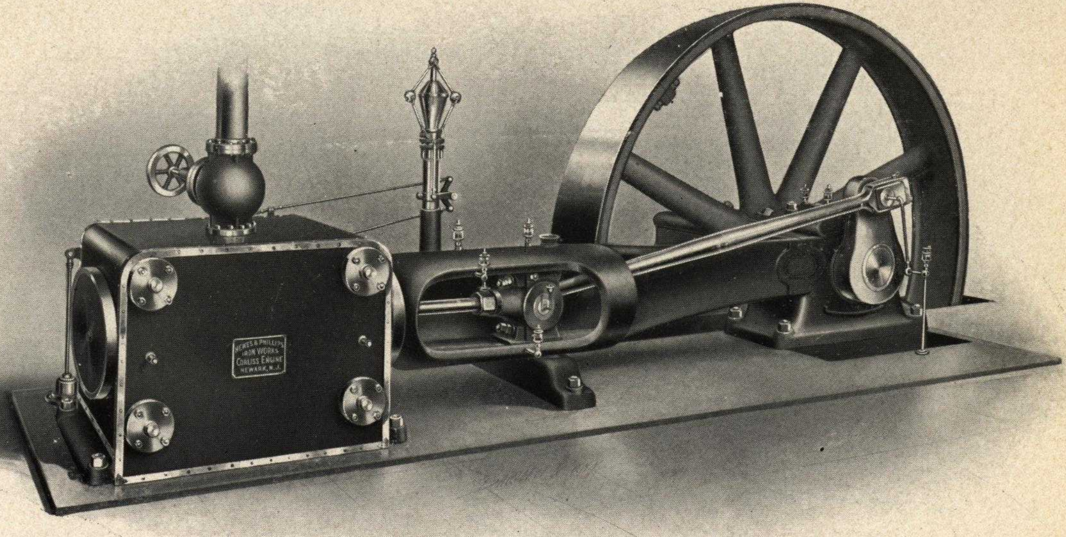
Crosshead Side
Heavy Duty Corliss Engine, Tangye Type

FRANKLIN ENGINE



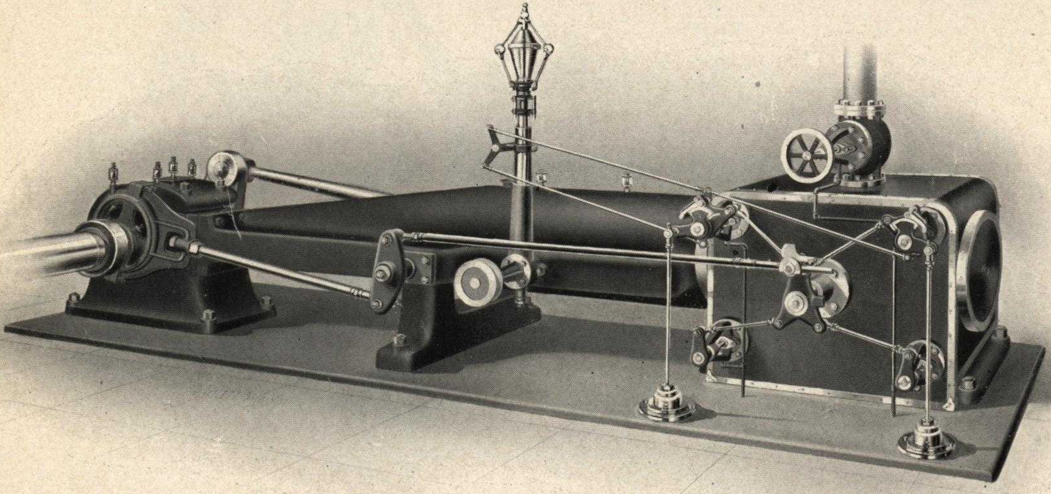
Valve Gear Side
Heavy Duty Corliss Engine, Tangye Type

STANDARD CORLISS ENGINE

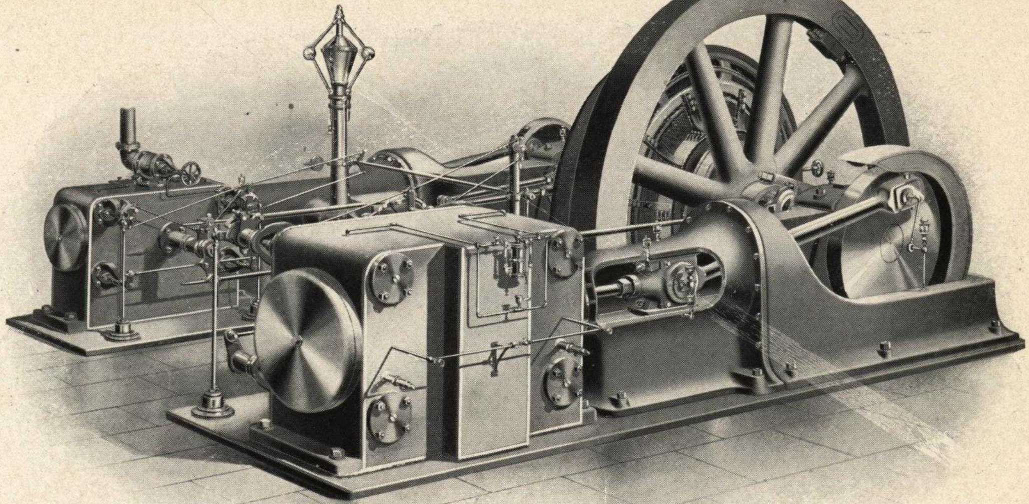


Crosshead Side—Tubular Girder Type

STANDARD CORLISS ENGINE



Valve Gear Side—Tubular Girder Type



Cross Compound Corliss Engine

Heavy-duty, Tangye Type.

Standard Corliss Engine—Table of Sizes and Power Ratings

Dimensions of Cylinder		Band Wheels			Horse-power 80 Lbs. Initial Pressure ¼ Cut-off		Horse-power 90 Lbs. Initial Pressure ¼ Cut-off		Pipe		Horse-power 100 Lbs. Initial Pressure ¼ Cut-off		Size of Quadrangle within which Engine including Flywheel will stand				Length of Crankshaft from Outside of Main Bearings		Distance from Center of Crank shaft to End of Cylinder		Height from Baseplate to Center of Crank-shaft		Horse-power Constant Based on Pound M. E. P. 1 Rev.
Bore in In.	Stroke in In.	Dia. in Ft.	Face in In.	Weight in Pds.	Revs. per Min.	Horse-power	Revs. per Min.	Horse-power	Steam	Exh'st	Revs. per Min.	Horse-Power	Length		Width								
													Ft.	Ins.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	
10	24	6	12	4000	125	50	125	55	3	4	125	62	13	1	5	11	5	2$\frac{3}{16}$	10	1	1	11	.0094
12	24	7	14	5000	125	75	125	84			125	93	14	11	6	9	5	3	10	11	1	11	.0137
12	30	8	14	6000	120	85	120	94	3½	5	120	104	16	11	6	9	5	2$\frac{13}{16}$	12	11	1	11	.0171
14	30	8	18	7000	120	115	120	125	4	6	120	137	17	7	7	7	5	10⅞	13	1	2	1	.0230
14	36	9	18	8000	110	126	110	143	4	6	110	160	19	7	7	7	5	10⅞	15	1	2	1	.0276
16	30	10	20	9000	120	151	120	170	5	6	120	190	18	5	8	8	6	6	13	5	2	3	.0301
16	36	10	24	10000	110	166	110	190	5	6	110	213	20	5	8	8	6	6	15	5	2	3	.0361
16	42	12	24	10600	100	177	100	200	5	6	100	226	23	5	8	8	6	6	17	5	2	3	.0421
18	36	12	26	12000	110	210	110	240	6	7	110	270	21	6	9	5	8	3$\frac{1}{16}$	15	6	2	5	.0457
18	42	14	28	14000	100	223	100	255	6	7	100	287	24	6	9	5	8	3$\frac{1}{16}$	17	6	2	5	.0533
20	36	12	28	14000	110	236	110	270			110	305	22	11	10	3	8	8½	15	11	2	6	.0564
20	42	14	30	17000	100	275	100	315	6	8	100	355	24	11	10	3	8	8½	17	11	2	6	.0658
20	48	16	34	19000	90	284	90	325	6	8	90	365	27	11	10	3	8	8½	19	11	2	6	.0753
22	42	16	36	21000	100	334	100	382	7	9	100	422	26	2	11	1	10	3	18	2	2	9	.0797
22	48	16	38	23000	90	341	90	393	7	9	90	442	28	2	11	1	10	3	20	2	2	9	.0911
22	54	16	40	25000	80	344	80	395	7	9	80	442	30	2	11	1	10	3	22	2	2	9	.1024
24	42	16	40	22000	100	398	100	454			100	510	28	8	12	0	11	3	20	8	2	11	.0948
24	48	16	40	24000	90	408	90	468	8	10	90	527	30	8	12	0	11	3	22	8	2	11	.1084
24	54	16	44	26000	80	410	80	468	8	10	80	526	32	8	12	0	11	3	24	8	2	11	.1219
26	48	16	44	30000	90	480	90	548	8	10	90	617	Shafts as desired						21	5	2	9	.1272
26	54	18	46	32000	80	480	80	549	8	10	80	618							23	5	2	9	.1431
26	60	18	48	34000	75	501	75	572			75	644							25	5	2	9	.1591
28	48	18	48	32000	90	563	90	645			90	726							21	9	2	10	.1477
28	54	18	52	31000	80	563	80	645			80	727							23	9	2	10	.1662
28	60	18	54	36000	75	587	75	672			75	757							25	9	2	10	.1846
30	48	18	56	34000	90	646	90	739			90	833							22	2	2	10	.1694
30	54	18	60	38000	80	646	80	740			80	834							24	2	2	10	.1906
30	60	18	64	40000	75	673	75	771			75	868							26	2	2	10	.2118
32	48	18	58	36000	90	736	90	841			90	948							22	7	2	10	.1928
32	54	20	62	39000	80	734	80	841			80	917							24	7	2	10	.2166
32	60	20	66	43000	75	766	75	877			75	988							26	7	2	10	.2410
34	54	20	78	60000	80	840	80	961			80	1083							24	11	2	11	.2477
34	60	20	78	60000	75	865	75	990			75	1115							26	11	2	11	.2720

HORSE-POWER.—In the computation of the power of an engine, the prime factors are area of cylinder, pressure of steam, piston speed, and point at which steam is cut off. Our calculations of horse-power, as indicated in the above table, are based upon an initial steam pressure of 80, 90 and 100 pounds per square inch, valve gear cutting off at ¼ stroke, piston speed varying from 500 feet for the smallest up to 750 for the largest size. These conditions can be changed, and by increasing one or all, the power of an engine is increased in like proportion.

Ajax Engine—Non-Releasing Valve Gear. Table of Powers and Dimensions

Initial Pressure in Pounds Kilowatts			Size of Engine	Revolutions	Initial Pressure in Pounds Horse-power			Diameter of Pipe		Pulley		Cubic Feet in Foundation	Approximate Floor Space Belted				From Center of Engine to Center of Back Bearing		From Center of Crank-shaft to end of Cylinder		From Center of Engine to Floor		Constant Based on 1 Pound M.E.P. 1 Rev.
								Steam	Exhaust	Diameter	Face		Length		Width								
100	125	150	Inches		100	125	150	Inches	Inches	Inches	Inches		Ft	Ins.	Ft.	Ins.	Ft.	Ins.	Ft.	Ins.	Ft.	Ins.	
58	72	88	12 x 15	225	86	108	132	4½	6	72	16	252	11	7	6	0	4	6	8	0		21	.0085
66	85	104	13 x 15	225	100	127	156	5	6	72	16	260	11	7	6	0	4	6	8	0		21	.0100
73	91	112	13½ x 15	225	110	137	168	5	6	72	16	260	11	7	6	0	4	6	8	3		21	.0108
79	95	120	14 x 15	225	118	147	181	5	6	72	16	270	11	8	6	5	5	0	8	3		21	.0116
83	105	129	14½ x 15	225	125	157	193	5	6	72	16	270	11	8	6	5	5	0	8	5		21	.0124
90	113	140	15 x 15	225	135	170	210	6	7	72	16	280	11	10	6	7	5	1	8	5		21	.0134
100	129	160	16 x 15	225	150	193	237	6	7	72	16	280	11	10	6	7	5	1	8	8		21	.0152
83	105	129	14 x 16	225	125	157	193	6	7	72	16	270	11	8	6	5	5	0	9	0		21	.0124
90	112	138	14½ x 16	225	135	169	207	6	7	72	16	270	11	8	6	5	5	0	9	0		21	.0133
96	120	150	15 x 16	225	145	181	223	6	7	72	16	290	11	10	6	7	5	1	9	2		21	.0143
106	136	167	16 x 16	225	160	204	251	6	7	72	18	290	11	10	6	9	5	2	9	2		21	.0161
123	154	190	17 x 16	225	185	231	286	6	7	72	18	290	11	10	6	9	5	2	9	4		21	.0183
113	143	173	16 x 18	210	170	215	265	6	7	78	20	300	13	5	7	7	6	0	9	6		21	.0182
130	162	200	17 x 18	210	195	244	300	6	7	78	22	320	13	5	7	9	6	1	9	6		21	.0206
143	181	223	18 x 18	210	215	272	335	6	7	78	24	330	13	5	7	11	6	3	9	8	2	1	.0230
160	202	269	19 x 18	210	240	304	404	7	8	78	26	360	13	5	8	10	7	0	9	8	2	1	.0257
178	225	276	20 x 18	210	268	338	415	7	8	78	28	420	13	8	9	0	7	3	9	10	2	1	.0285
130	162	200	17 x 19	200	195	245	301	6	7	84	24	430	13	11	7	11	6	3	10	0	2	1	.0217
150	182	225	18 x 19	200	220	274	337	6	7	84	25	440	13	11	8	0	6	3	10	0	2	1	.0243
160	204	251	19 x 19	200	240	306	376	7	8	84	26	450	13	11	8	10	7	0	10	2	2	1	.0271
180	226	278	20 x 19	200	270	340	418	7	8	84	26	460	13	11	8	10	7	0	10	6	2	1	.0301
153	192	236	18 x 20	200	230	289	355	6	7	84	26	470	14	10	8	2	6	5	10	8	2	1	.0256
170	215	264	19 x 20	200	255	322	396	6	7	84	28	480	14	10	9	0	7	3	10	8	2	1	.0285
190	238	293	20 x 20	200	285	358	440	7	8	84	30	500	14	10	9	2	7	4	10	10	2	1	.0317
206	262	323	21 x 20	200	310	394	485	7	8	84	32	500	14	10	9	2	7	4	11	0	2	1	.0349

HORSE-POWER.—In the computation of the power of an engine, the prime factors are area of cylinder, pressure of steam, piston speed, and point at which steam is cut off. Our calculations of horse-power, as indicated in the above table, are based upon an initial steam pressure of 100, 125 and 150 pounds per square inch, valve gear cutting off at ¼ stroke, piston speed varying from 562 feet for the smallest up to 666 for the largest size. These conditions can be changed, and by increasing one or all, the power of an engine is increased in like proportion.

Franklin Releasing Gear Corliss Engine—Table of Powers and Dimensions

Initial Pressure in Pounds			Size of Engine	Revolutions	Initial Pressure in Pounds			Fly-wheel			Cubic Feet in Foundation	Outside Dimensions of Engine Including Fly-wheel				From Center of Engine to Center of Back Bearing		From Center of Crank-shaft to end of Cylinder		From Center of Engine to Floor		Constant Based on 1 Pound M. E. P. 1 Revolution
100	125	150			100	125	150	Diameter in Feet	Face in Inches	Length of Hub in Inches												
Kilowatts			Inches		Horse-power							Ft.	Ins.	Ft.	Ins.	Ft.	Ins.	Ft.	Ins.	Ft.	Ins.	
51	62	79	10 x 24	150	76	98	119	7	8	12	250	14	1⅜	10	0	7	6	10	7⅜		21	.0094
52	68	82	10 x 20	200	78	102	124	7	8	12	220	12	9⅜	9	6	7	0	9	3⅜		21	.0078
73	98	116	12 x 24	150	110	148	174	8	8	13	270	14	8	10	0	7	2	10	8		21	.0137
82	106	128	12 x 20	200	123	159	193	7	8	13	260	13	4	10	0	8	6	9	4		21	.0114
92	119	145	12 x 30	150	138	179	218	8	8	13	280	16	8	10	8	9	0	12	8		21	.0171
110	142	173	14 x 20	200	165	214	260	7	9	16	300	14	6	12	3	10	0	10	0¼		21	.0153
97	128	156	14 x 24	150	146	193	234	8	10	18	325	15	10	12	3	10	0	11	4¼		21	.0184
124	160	193	14 x 30	150	186	241	293	9	10	20	450	17	10	13	6	10	9	13	4¼		21	.0230
145	187	227	16 x 20	200	217	281	311	7	10	18	400	14	6	12	6	10	0	10	0		21	.0201
130	168	204	16 x 24	150	195	252	306	8	10	18	425	15	10	12	6	10	0	11	4		21	.0243
163	210	255	16 x 30	150	243	316	383	9	10	20	500	17	10	13	0	10	3	13	4		21	.0301
182	236	286	18 x 20	200	273	354	430	7	10	18	480	15	8	15	6	13	0	10	2⅛		21	.0253
164	212	260	18 x 24	150	246	319	387	9	10	20	500	17	0	16	0	13	7	11	6⅛		21	.0307
205	268	322	18 x 30	150	307	402	484	9	10	20	572	19	0	16	0	13	7	13	6⅛		21	.0380
253	328	399	20 x 30	150	380	493	599	9	10	20	600	19	6	16	6	14	1	13	8½	2	1	.0475
253	328	399	20 x 36	125	380	493	599	10	10	22	670	20	6	19	0	16	1	15	8½	2	1	.0564
318	412	501	22 x 30	150	477	619	752	9	10	22	630	19	8	19	6	17	0	14	4⅛	2	1	.0575
277	402	496	22 x 36	125	465	603	745	10	10	22	700	21	4⅛	19	6	17	0	16	4⅛	2	1	.0690
313	410	500	24 x 30	150	470	608	750	9	10	22	690	22	0	20	0	17	6	15	1¼	2	1	.0684
369	478	581	24 x 36	125	554	718	872	10	11	23	780	22	1¼	20	0	17	6	17	1¼	2	1	.0821
433	561	682	26 x 36	125	650	842	1023	10	11	23	800	22	1½	21	0	18	0	17	1½	2	1	.0963
404	524	636	26 x 42	100	606	786	955	12	11	24	880	24	1½	21	0	18	0	19	1½	2	1	.1124
498	645	784	28 x 36	125	747	968	1176	10	11	24	840	23	3	21	6	18	6	17	3	2	9	.1107
469	608	738	28 x 42	100	704	913	1109	12	11	24	900	25	3	21	6	18	6	19	3	2	9	.1305
576	748	910	30 x 36	125	867	1124	1355	10	12	24	980	23	9	22	0	19	0	17	9	2	9	.1285

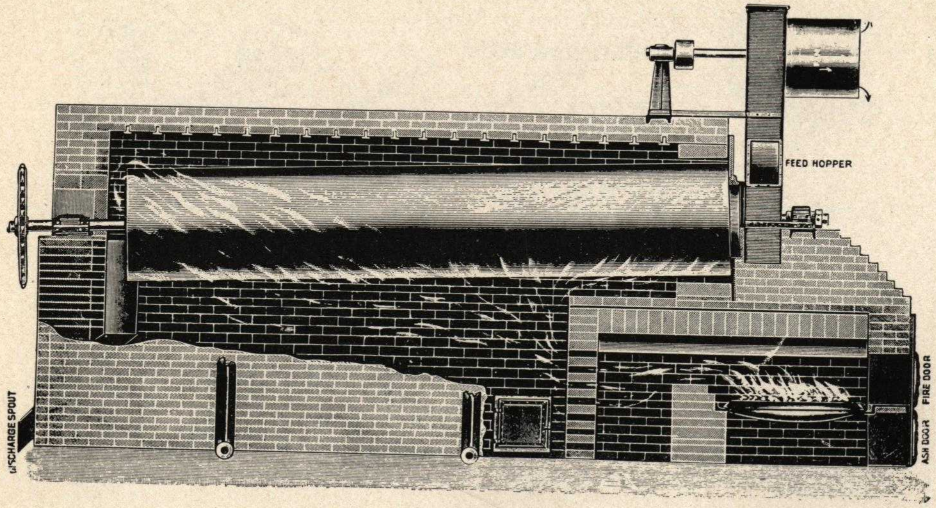
HORSE-POWER.—In the computation of the power of an engine, the prime factors are area of cylinder, pressure of steam, piston speed, and point at which steam is cut off. Our calculations of horse-power, as indicated in the above table, are based upon an initial steam pressure of 100, 125 and 150 pounds per square inch, valve gear cutting off at ¼ stroke, piston speed varying from 600 feet for the smallest up to 750 for the largest size. These conditions can be changed, and by increasing one or all, the power of an engine is increased in like proportion.

The illustration on opposite page shows our Rotary Dryer. The regular size is 36 inches in diameter, 16 feet long, but we make other sizes. The cylinder is of sheet steel ¼ inch in thickness, bent to a true circle, and made of sheets the full length of the cylinder. All seams are the longitudinal way of the cylinder, and all rivets are staggered and driven hot, and of sufficient size to make a good and substantial job. No cross seams in the cylinder at all. All the material furnished for the dryer is of the best of its kind for the purpose. All parts of the dryer are made to expand or contract without damage.

The cylinder is supported by two heavy steel shafts or gudgeons, running in special heavy journal boxes, one shaft at each end, and each shaft is securely fastened to two special steel spiders, which are riveted to the shell of the dryer. Inside of the cylinder are placed a number of angles running the entire length of the cylinder, which are so arranged as to form on inter-elevator and cascade the material. The illustration shows the dryer set in brick work, so arranged that the product of combustion or the heat, passes first around the outside of the cylinder and then through it, passing through the material to be dried and out through the breeching and fan at the front end. The dryer being set at a slight incline, every revolution of the cylinder carries the material forward toward the end of the dryer, where the material is discharged. The dried material drops into a spout which delivers it outside of the brick work, where it can be elevated or conveyed to any desired point. This dryer is usually driven by a large sprocket-wheel, but an electric motor or other means will be furnished when desired. The dryer is especially adapted for drying such substances as clay, iron ore, marls, sand, pebbles, chalk, phosphate rock, infusorial earth, Fuller's earth, nitrate of soda, sawdust, and all similar materials, in quantities from 6,000 to 30,000 pounds per hour, according to the amount of moisture contained therein. We have them drying 20,000 pounds of sand an hour, sand containing from 8 to 10 per cent. of moisture. It will evaporote from 8 to 10 pounds of moisture with one pound of bituminous coal, or its equivalent.

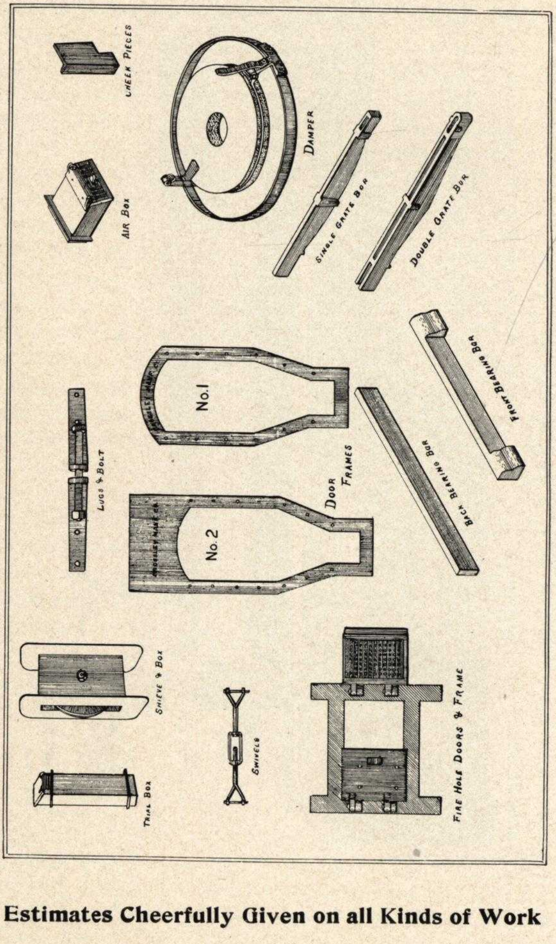
No.	Diameter of Cylinder	Length of Cylinder	Total Length of Brick Work	Total Width of Brick Work	Total Height of Brick Work	Total Weight of All Iron Work	Common Brick	Fire Brick	H. P.
1	30 ins.	12 ft.	17 ft.	5½ ft.	8 ft.	6,000 lbs.	6,000 lbs.	2,500 lbs.	4
2	36 ins.	16 ft.	21 ft.	6½ ft.	8 ft.	9,000 lbs.	10,000 lbs.	3,600 lbs.	5
3	36 ins.	18 ft.	23 ft.	6½ ft.	8 ft.	10,000 lbs.	10,500 lbs.	3,600 lbs.	5
4	36 ins.	20 ft.	25 ft.	6½ ft.	8 ft.	11,000 lbs.	11,000 lbs.	3,600 lbs.	6

ROTARY DRYERS



Showing Dryer Set in Brick Work

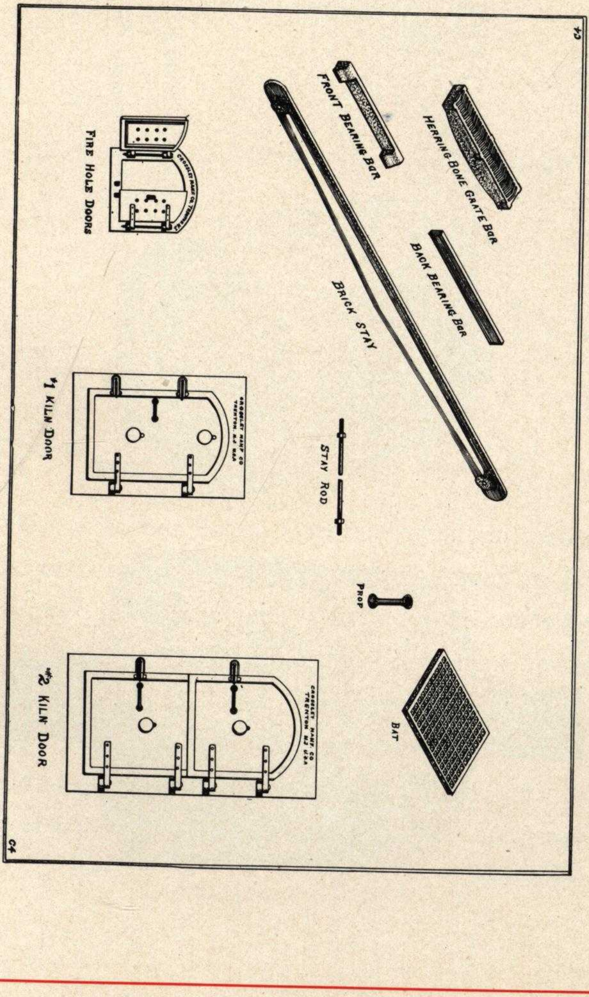
Iron Work for Biscuit or Glost Kilns



Biscuit or Glost Kiln Iron Work

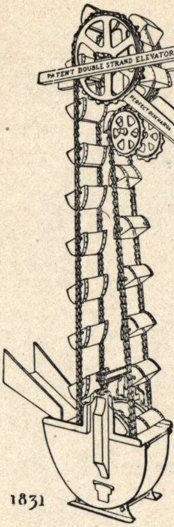
Estimates Cheerfully Given on all Kinds of Work

Iron Work for Decorating Kilns

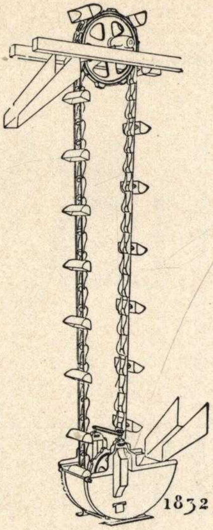


Decorating Kiln Iron Work

CONVEYING MACHINERY



1831

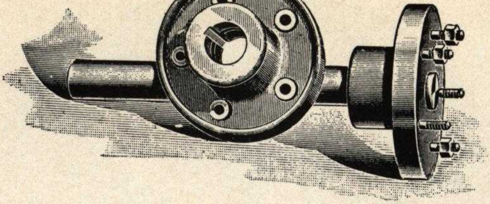


1832

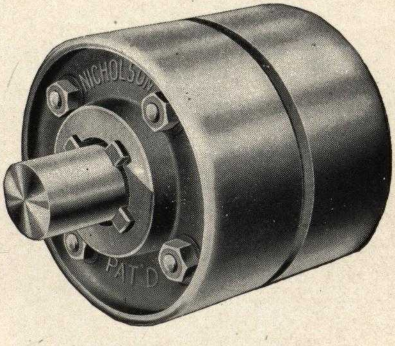
Perfect discharge elevators permit use of spaced buckets, and, by completely inverting them, make clean delivery into chute at elevator head. They are run at relatively low speeds, and have met with much favor for handling breakable substances or materials which tend to cling to the buckets, such as clay, grogg, pulverized materials, etc.

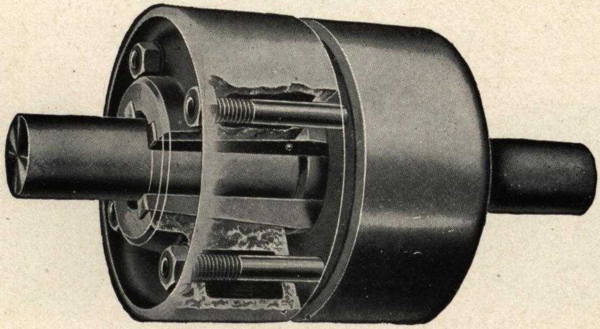
We can send full information, with prices, on these conveyors and elevators, to suit all requirements of the clay worker.

Standard Plate Couplings



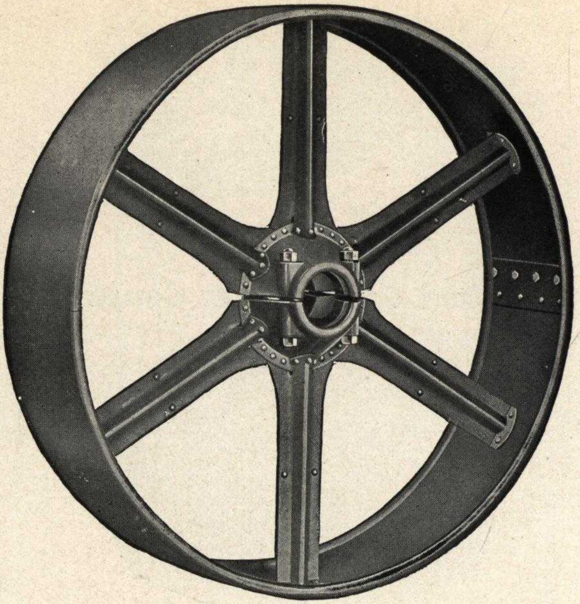
Nicholson Compression Couplings





Prices on Application

ONEIDA PRESSED STEEL PULLEYS



SAFETY SET COLLARS

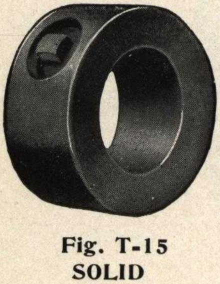


Fig. T-15
SOLID

Prices on Application

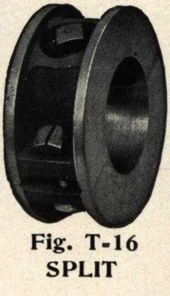


Fig. T-16
SPLIT

ROPE TRANSMISSION SHEAVES

When ordering state number of grooves and whether "U" or "V" groove is required, also if to be lined with wood or rubber.

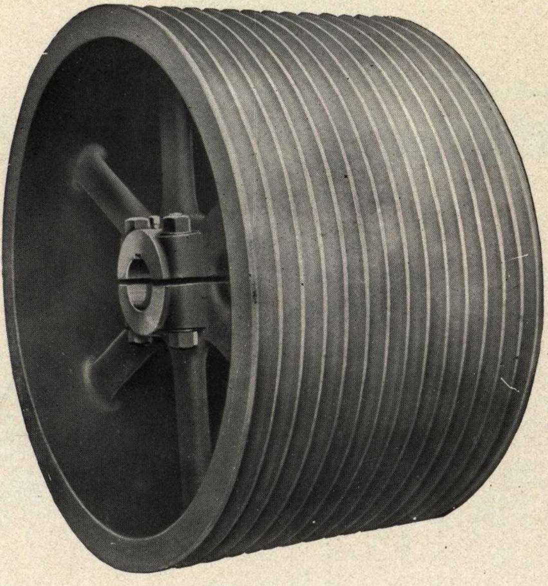
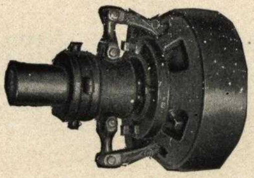


Fig. T-114

A very important feature in the construction of Rope Drives is to procure Sheaves that have the metal properly distributed, thereby avoiding unnecessary shrinkage strains. It is also important that the grooves be finished to the same pitch diameter, and of the proper form, accurately turned and polished, otherwise there will be an uneven distribution of stress on the ropes, as well as slippage, which will wear and shorten the life of the rope.

FRICTION CLUTCHES



PRICE LIST

Including Shifter Forks and Fulcrum

Subject to Discount

Diameter of Clutch	H. P. at 100 R. P. M.	Largest Bore	Clutch with Exten. Sleeve	Cut off Coupling
7 in.	3	2 in.	$ 25 00	$ 25 00
8 "	6	2 "	30 00	30 00
10 "	10	2½ "	40 00	39 00
12 "	15	3½ "	50 00	48 00
15 "	25	4½ "	65 00	62 00
17 "	32	5 "	90 00	85 00
20 "	40	5½ "	120 00	114 00
24 "	60	6½ "	165 00	155 00

NOTE.—17, 20, 24 in. Clutches made with three levers in place of two, shown in cuts.

We furnish any kind of pulley wanted.

Universal Giant Friction Clutches

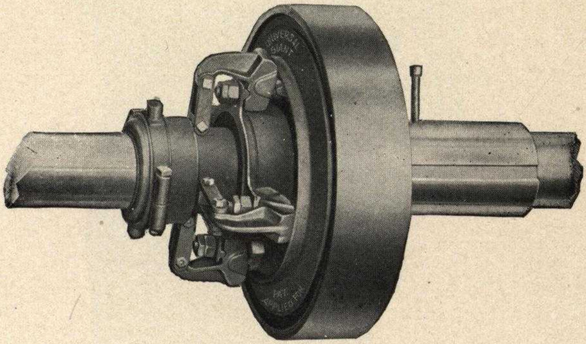


Fig. T-105

Clutch No.	RANGE OF BORES		Standard Diam. of Sleeves and Bore of Pulley	Standard Length of Sleeves	Total Space Required on Shaft	Horse Power at 100 R. P. M.	List Prices of Plain Bore Clutches including Yoke and Fulcrum
	Standard Stock Clutches Will Bore	Special Clutches Will Bore					
5	15/16—1½	. . . . .	2 7/16	5½	12½	1¾	$18.00
6	1 3/16—1¾	. . . . .	2 11/16	6½	14½	3	20.00
7	. . . . .	1 13/16—2¾	3 11/16	6½	14½	3	24.75
8	1 7/16—2¼	. . . . .	3 3/16	8½	17⅞	5½	26.00
9	. . . . .	2 5/16—3¼	4 3/16	8½	17⅞	5½	32.50
10	1 11/16—2½	. . . . .	3½	11¼	21⅞	10	36.00
10	. . . . .	2 9/16—3	3 15/16	11¼	21⅞	10	39.50
11	. . . . .	3 1/16—4	5 3/16	11¼	21⅞	10	44.00
12	1 15/16—2½	. . . . .	3½	12⅛	23¼	15	45.00
12	. . . . .	2 9/16—2¾	3 15/16	12½	23⅝	15	49.50
12	. . . . .	2 13/16—3¼	4 7/16	12½	23⅝	15	49.50
12	. . . . .	3 5/16—3¾	4 15/16	12½	23⅝	15	49.50
12	. . . . .	3 13/16—4	5 7/16	12½	23⅝	15	49.50

Universal Giant Head Shaft Hangers

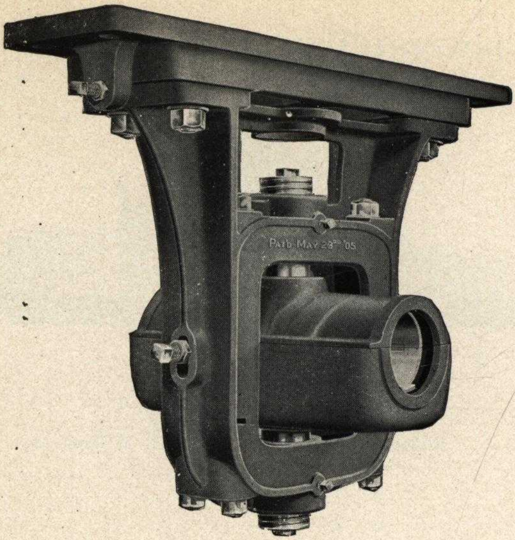


Fig. T-25

EXTRA HEAVY

Adjustable, Ring Oiling, Ball and Socket

Universal Giant Bearings

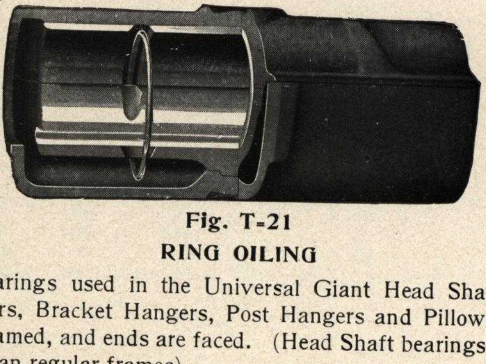


Fig. T-21

RING OILING

The Bearings used in the Universal Giant Head Shaft Hangers, Drop Hangers, Bracket Hangers, Post Hangers and Pillow Blocks, are babbitted, reamed, and ends are faced. (Head Shaft bearings fit the next size larger than regular frames).

Universal Giant Bracket Hangers

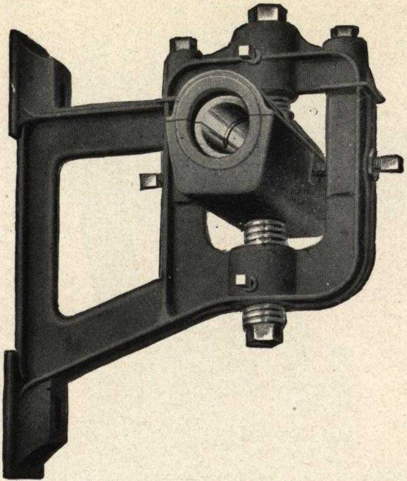


Fig. T-28

Adjustable, Ring Oiling, Ball and Socket

LIST PRICES

Shaft Sizes inches	Reach in Inches						
	10	12	14	16	18	20	24
$1\frac{7}{16}$	$7.20	$7.60	$8.00	$8.40	$8.90		
$1\frac{11}{16}$	7.70	8.10	8.50	8.90	9.40		
$1\frac{15}{16}$	9.50	10.00	10.50	11.00	11.75	$12.50	$13.60
$2\frac{3}{16}$	10.25	10.75	11.25	11.75	12.50	13.25	14.35
$2\frac{7}{16}$	14.40	15.00	15.60	16.30	17.00	17.90	21.00
$2\frac{11}{16}$	15.40	16.00	16.60	17.30	18.00	18.90	22.00
$2\frac{15}{16}$	19.50	20.25	21.00	22.00	23.00	24.00	26.00
$3\frac{3}{16}$	20.75	21.50	22.25	23.25	24.25	25.25	27.25
$3\frac{7}{16}$	24.10	28.00	29.00	30.50	32.00	34.00	38.00
$3\frac{11}{16}$	25.60	29.50	30.50	32.00	33.50	35.50	39.50
$3\frac{15}{16}$	. . . . .	32.75	37.00	39.00	41.00	43.00	46.00

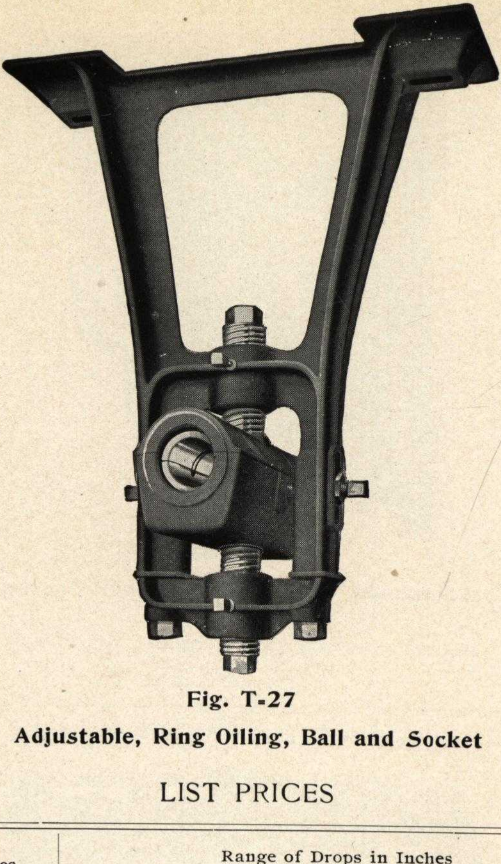


Fig. T-27

Adjustable, Ring Oiling, Ball and Socket

LIST PRICES

Shaft Sizes inches	Range of Drops in Inches							
	7-9	10-12	13-15	16-18	19-20	23-25	28-30	34-36
$1\frac{3}{16}$	$4.20	$4.50	$4 80	$5.30	$5.70			
$1\frac{7}{16}$	5.50	6.10	6.70	7.20	7.80	$9.00		
$1\frac{11}{16}$	6.00	6.60	7.20	7.70	8.30	9.50		
$1\frac{15}{16}$	7.25	8.25	9 00	9.50	10 40	11 40	$14.65	
$2\frac{3}{16}$	8.00	9.00	9.75	10.25	11.15	12 15	15.40	
$2\frac{7}{16}$	11.40	12.40	13.10	13.85	14.80	17.50	19.10	$22.80
$2\frac{11}{16}$	12.40	13.40	14.10	14.85	15.80	18.50	20.10	23.80
$2\frac{15}{16}$	15.00	16.70	17.65	19.00	20.00	21.60	24.65	29.15
$3\frac{3}{16}$	16.25	17.95	18.90	20.25	21.25	22.85	25.90	30.40

RING OILING RIGID PILLOW BLOCKS

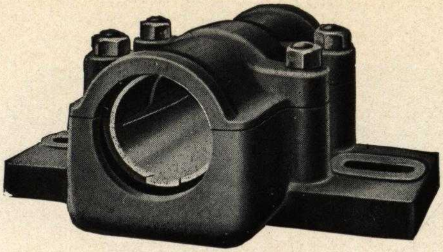


Fig. T-40

Style for $3\frac{3}{16}$ inches and smaller shafts

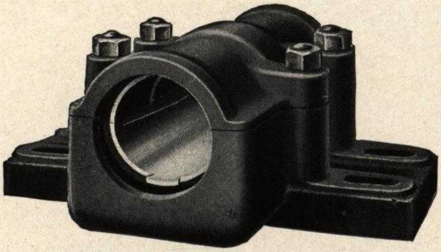


Fig. T-41

Style for $3\frac{7}{16}$ inches and larger shafts

Ring Oiling Rigid Pillow Blocks have slotted holes in base for lateral adjustment.

Bearings are ring oiling, babbitted, reamed to size and ends faced.

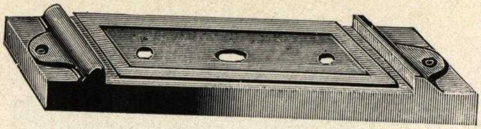
The rings used are of spring steel, tempered.

The oil reservoir is of large proportions. The lower half of bearing has ball and socket contact with base of outer shell.

Dust Proof Bearings can be furnished.

Shaft Sizes inches	List Prices	Shaft Sizes inches	List Prices
$1\frac{3}{16}$	$4.00	$2\frac{15}{16}$	$12.00
$1\frac{7}{16}$	4.75	$3\frac{3}{16}$	13.50
$1\frac{11}{16}$	5.40	$3\frac{7}{16}$	16.50
$1\frac{15}{16}$	6.00	$3\frac{11}{16}$	19.00
$2\frac{3}{16}$	7.00	$3\frac{15}{16}$	23 00
$2\frac{7}{16}$	8.25	$4\frac{7}{16}$	30.00
$2\frac{11}{16}$	9.75	$4\frac{15}{16}$	40.00

SOLE PLATES



STANDARD RIGID PILLOW BLOCKS

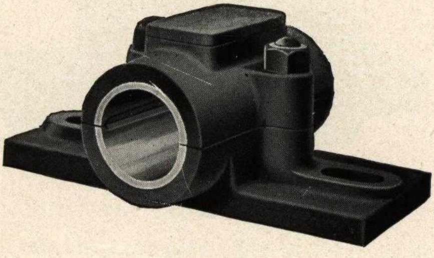
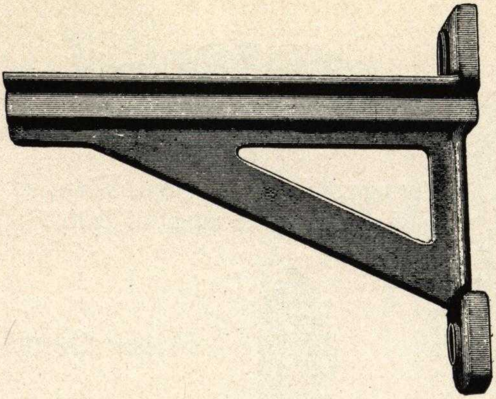


Fig. T-42

Shaft Sizes Inches	List Prices	Shaft Sizes Inches	List Prices
$1\frac{3}{16}$	$1.60	$2\frac{7}{16}$	$5.50
$1\frac{7}{16}$	2.00	$2\frac{11}{16}$	7.00
$1\frac{11}{16}$	2.60	$2\frac{15}{16}$	8.75
$1\frac{15}{16}$	3.60	$3\frac{3}{16}$	11.00
$2\frac{3}{16}$	4.70		

Prices on application.

WALL BRACKETS

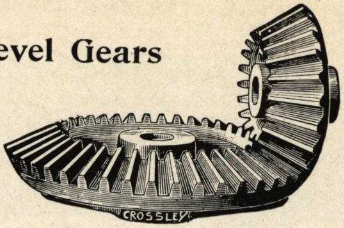


Prices Subject to Discount

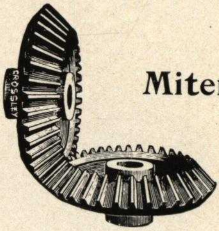
Diameter of Shaft. Inches	Total length of bracket from wall. Inches	Price	Diameter of Shaft. Inches	Total length of bracket from wall. Inches	Price
1 3-16	18	$ 6 00	1 15-16	24	$ 10 00
1 3-16	24	7 00	1 15-16	30	12 00
1 7-16	18	7 00	2 3-16	24	12 00
1 7-16	24	8 00	2 3-16	30	14 00
1 11-16	24	8 00	2 7-16	24	14 00
1 11-16	30	10 00	2 7-16	30	16 00

We have a full line of gears always in stock.

Bevel Gears



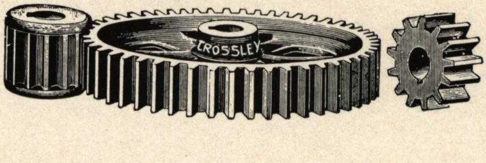
When ordering gears state pitch, width of face, pitch diameter, size of shaft and number of teeth.



Miter Gears

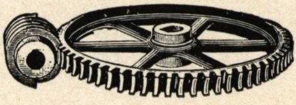
Special gears of any design or shape can be furnished promptly.

Spur Gears



We will send full gear lists and prices upon application.

Worms and Worm Gears



SEGER CONES

The Seger Cones were developed in Germany by Dr. Herman A. Seger in his life work of putting the clay industry in that country on a scientific basis. They are now made in this country by the following table of chemical formula and mixture. The analysis of his Zettlitz Kaolin and Rackonitz Shale Clay, which in nature we term in this country as plastic and flint clay, are as follows, and which he uses as his standard:

	Zettlitz Kaolin	Rackonitz Shale Clay
Silica	46.87	52.50
Alumina	38.56	45.22
Lime	trace	0.50
Iron Oxide	0.83	0.81
Magnesia	trace	0.54
Potash Soda	1.06	trace
Loss Ignition	12.73	0.78
	100.05	100.35

Mechanical Analysis: Rackonitz Shale Clay.
99.27% Clay substance.
0.73% Sand.

The Clay, therefore, consists of pure clay substances.

The melting point of cones is the ratio of alumina to silica and the amount of fluxes contained. We have, if anything, in this country purer clays in their natural state than abroad that will produce a higher cone than No. 36, the highest point reached in Germany.

TABLE OF OFFICIAL MELTING POINTS OF SEGER CONES

CONE No.	DEGREES CENTIGRADE	DEGREES FAHRENHEIT
010	950	1742
09	970	1778
08	990	1814
07	1010	1850
06	1030	1886
05	1050	1922
04	1070	1958
03	1090	1994
02	1110	2030
01	1130	2066
1	1150	2102
2	1170	2138
3	1190	2174
4	1210	2210
5	1230	2246
6	1250	2282
7	1270	2318
8	1290	2354
9	1310	2390
10	1330	2426
11	1350	2462
12	1370	2498
13	1390	2534
14	1410	2570
15	1430	2606
16	1450	2642
17	1470	2678
18	1490	2714
19	1510	2750
20	1530	2786
21	1550	2822
22	1570	2858
23	1590	2894
24	1610	2930
25	1630	2966
26	1650	3002
27	1670	3038
28	1690	3074
29	1710	3110
30	1730	3146
31	1750	3182
32	1770	3218
33	1790	3254
34	1810	3290
35	1830	3326
36	1850	3362

SEGER CONES

Cone No.	Chemical Formula	Mixture	
1	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\,O\end{matrix}\right\}\left\{\begin{matrix}0.2\ Fe_2O_3\\0.3\ Al_2O_3\end{matrix}\right\}4\ Si\,O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	66.00
		Iron Oxide	16.00
2	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\,O\end{matrix}\right\}\left\{\begin{matrix}0.1\ Fe_2O_3\\0.4\ Al_2O_3\end{matrix}\right\}4\ Si\,O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	60.00
		Iron Oxide	8.0
		Zettlitz Kaolin	12.95
3	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\,O\end{matrix}\right\}\left\{\begin{matrix}0.05\ Fe_2O_3\\0.45\ Al_2O_3\end{matrix}\right\}4\ Si\,O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	57.00
		Iron Oxide	4.00
		Zettlitz Kaolin	19.43
4	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\,O\end{matrix}\right\}0.5\ Al_2O_3,\ 4\ Si\,O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	54.00
		Zettlitz Kaolin	25.90
5	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\,O\end{matrix}\right\}0.5\ Al_2O_3,\ 5\ Si\,O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	84.00
		Zettlitz Kaolin	25.90
6	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\,O\end{matrix}\right\}0.6\ Al_2O_3,\ 6\ Si\,O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	108.0
		Zettlitz Kaolin	35.85
7	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\,O\end{matrix}\right\}0.7\ Al_2O_3,\ 7\ Si\,O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	132.0
		Zettlitz Kaolin	51.80
8	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\,O\end{matrix}\right\}0.8\ Al_2O_3,\ 8\ Si\,O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	156.00
		Zettlitz Kaolin	64.75
9	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\,O\end{matrix}\right\}0.9\ Al_2O_3,\ 9\ Si\,O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	180.00
		Zettlitz Kaolin	77.70
10	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\,O\end{matrix}\right\}1.0\ Al_2O_3,\ 10\ Si\,O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	204.00
		Zettlitz Kaolin	90.65
11	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\,O\end{matrix}\right\}1.2\ Al_2O_3,\ 12\ Si\,O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	252.00
		Zettlitz Kaolin	116.55

SEGER CONES—Continued

Cone No.	Chemical Formula	Mixture	
12	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\ O\end{matrix}\right\}1.4\ Al_2\ O_3,\ 14\ Si\ O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	300.00
		Zettlitz Kaolin	142.45
13	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\ O\end{matrix}\right\}1.6\ Al_2\ O_3,\ 16\ Si\ O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	348.00
		Zettlitz Koalin	168.35
14	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\ O\end{matrix}\right\}1.8\ Al_2\ O_3,\ 18\ Si\ O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	396.00
		Zettlitz Kaolin	194.25
15	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\ O\end{matrix}\right\}2.1\ Al_2\ O_3,\ 21\ Si\ O_2$	Feldspar	83.25
		Marble	35.00
		Quartz	468.00
		Zettlitz Kaolin	233.10
16	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\ O\end{matrix}\right\}2.4\ Al_2\ O_3,\ 24\ Si\ O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	540.00
		Zettlitz Kaolin	271.95
17	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\ O\end{matrix}\right\}2.7\ Al_2\ O_3,\ 27\ Si\ O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	612.00
		Zettlitz Kaolin	310.80
18	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\ O\end{matrix}\right\}3.1\ Al_2\ O_3,\ 31\ Si\ O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	708.00
		Zettlitz Kaolin	362.60
19	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\ O\end{matrix}\right\}3.5\ Al_2\ O_3,\ 35\ Si\ O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	804.00
		Zettlitz Kaolin	414.40
20	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\ O\end{matrix}\right\}3.9\ Al_2\ O_3,\ 39\ Si\ O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	900.00
		Zettlitz Kaolin	466.20
21	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\ O\end{matrix}\right\}4.4\ Al_2\ O_3,\ 44\ Si\ O_2$	Feldspar	83.55
		Marble	35.0
		Quartz	1020.0
		Zettlitz Kaolin	530.95
22	$\left.\begin{matrix}0.3\ K_2O\\0.7\ Ca\ O\end{matrix}\right\}4.9\ Al_2\ O_3,\ 49\ Si\ O_2$	Feldspar	83.55
		Marble	35.00
		Quartz	1140.0
		Zettlitz Kaolin	595.70

SEGER CONES—Continued

Cone No.	Chemical Formula	Mixture	
23	$\left.\begin{array}{l}0.3\ K_2O\\0.7\ Ca\ O\end{array}\right\}5.4\ Al_2O_3,\ 54\ SiO_2$	Feldspar	83.55
		Marble	35.00
		Quartz	1260.0
		Zettlitz Kaolin	660.45
24	$\left.\begin{array}{l}0.3\ K_2O\\0.7\ Ca\ O\end{array}\right\}6.0\ Al_2O_3,\ 60\ SiO_2$	Feldspar	83.55
		Marble	35.00
		Quartz	1404.00
		Zettlitz Kaolin	738.15
25	$\left.\begin{array}{l}0.3\ K_2O\\0.7\ Ca\ O\end{array}\right\}6.6\ Al_2O_3,\ 66\ SiO_2$	Feldspar	83.55
		Marble	35.00
		Quartz	1548.0
		Zettlitz Kaolin	815.85
26	$\left.\begin{array}{l}0.3\ K_2O\\0.7\ Ca\ O\end{array}\right\}7.2\ Al_2O_3,\ 72\ SiO_2$	Feldspar	83.55
		Marble	35.00
		Quartz	1692.00
		Zettlitz Kaolin	893.55
27	$\left.\begin{array}{l}0.3\ K_2O\\0.7\ Ca\ O\end{array}\right\}20\ Al_2O_3,\ 200\ SiO_2$	Feldspar	83.55
		Marble	35.00
		Quartz	4764.0
		Zettlitz Kaolin	2551.13
28	$Al_2O_3,\ 10\ SiO_2$	Quartz	240.0
		Zettlitz Kaolin	129.5
29	$Al_2O_3,\ 8\ SiO_2$	Quartz	180.0
		Zettlitz Kaolin	129.5
30	$Al_2O_3,\ 6\ SiO_2$	Quartz	120.0
		Zettlitz Kaolin	129.5
31	$Al_2O_3,\ 5\ SiO_2$	Quartz	90.0
		Zettlitz Kaolin	129.5
32	$Al_2O_3,\ 4\ SiO_2$	Quartz	60.0
		Zettlitz Kaolin	129.5
33	$Al_2O_3,\ 3\ SiO_2$	Quartz	30.0
		Zettlitz Kaolin	129.5
34	$Al_2O_3,\ 2.5\ SiO_2$	Quartz	15.0
		Zettlitz Kaolin	129.5
35	$Al_2O_3,\ 2\ SiO_2$	Zettlitz Kaolin	
36		Rackonitz Shale Clay	

The melting of these tetrahedrous determines the temperatures between the melting point of 90 gold, 10 platinum (that is about 1145°) and the highest heat of the porcelain fire. The temperatures which correspond to the melting points of the cones 21 to 26 are reached in the iron and steel industries. The cones 26 to 36 serve for the determination of the refractoriness of clays.

TEMPERATURES

TABLE OF MELTING POINTS

To convert Fahrenheit degrees to Centigrade, subtract 32° and multiply by $\frac{5}{9}$.

To convert Centigrade degrees to Fahrenheit, multiply by $\frac{9}{5}$ and add 32°.

Tallow	92° F.	Silver (pure)	1830° F.
Spermaceti	120° F.	Copper	2050° F.
White Wax	154° F.	Gold (coin)	2156° F.
Sulphur	239° F.	Cast iron	2000° F. to 2200° F.
Tin	455° F.	Steel	2350° F. to 2550° F.
Bismuth	518° F.	Wrought iron	2700° F. to 2900° F.
Lead	630° F.		
Zinc	793° F.		
Antimony	810° F.		

The appearance of a fire affords a good indication of the temperature of a furnace.

(A little practice reduces the error of high temperatures to within 100° F.)

Red, just visible	977° F.	525° C.
Red, dull	1290° F.	700° C.
Red, dull cherry	1472° F.	800° C.
Red, full	1657° F.	900° C.
Red, clear	1832° F.	1000° C.
Orange, deep	2012° F.	1100° C.
Orange, clear	2192° F.	1200° C.
White	2272° F.	1300° C.
White, bright	2552° F.	1400° C.
White, dazzling	2732° F.	1500° C.
	2912° F.	1600° C.

Above tables give the colors of Iron caused by heat. (Pouillet).

USEFUL INFORMATION

Linear Expansion of Substances by Heat

To find the increase in the length of a bar of any material due to an increase of temperature, multiply the number of degrees of increase of temperature by the coefficient for 100 degrees and by the length of the bar, and divide by 100.

NAME OF SUBSTANCE	Coef. for 100° Fahr.	Coef. for 180° Fahr. or 100° C
Baywood (in the direction of the grain, dry)	.00026 to .00031	.00046 to .00057
Brass (cast)	.00104	.00188
Brass (wire)	.00107	.00193
Brick (fire)	.0003	.0005
Cement (Roman)	.0008	.0014
Copper	.0009	.0017
Deal (in the direction of the grain, dry)	.00024	.00044
Glass (English flint)	.00045	.00081
Glass (French white lead)	.00048	.00087
Gold	.0008	.0015
Granite (average)	.00047	.00085
Iron (cast)	.0006	.0011
Iron (soft, forged)	.0007	.0012
Iron (wire)	.0008	.0014
Lead	.0016	.0029
Marble (carrara)	.00036 to .0006	.00065 to .0011
Mercury	.0033	.0060
Platinum	.0005	.0009
Sandstone	.0005 to .0007	.0009 to .0012
Silver	.0011	.002
Slate (Wales)	.0006	.001
Water (varies considerably with the temperature)	.0086	.0155

FOR REFERENCE

Diameter multiplied by 3.1416=circumference.

Circumference multiplied by .3183=diameter.

Radius multiplied by 6.2831=circumference.

Square of the diameter multiplied by .7854=area.

Diameter multiplied by .8862=side of equal square.

Area of a rectangle=length multiplied by breadth.

Doubling the diameter of a circle increases its area four times.

Size of a square multiplied by 1.128=diameter of circle of equal area.

Surface of a sphere=square of diameter multiplied by 3.1416.

Area of a triangle=base multiplied by ½ the altitude.

Area of a sector of a circle=one-half the length of the arc multiplied by the radius of the circle.

1 cubic foot of water weighs 62½ pounds and contains 7½ gallons.

1 gallon of water (U. S. Standard) weighs 8⅓ pounds.

To find the capacity (U. S. gallons) of cylindrical tanks, square the diameter expressed in inches, multiply by the length and by .0034.

Boiler Horse Power: The evaporation of 30 lbs. of water per hour, from a temperature of 100° F. into steam at 70 lbs. gauge pressure.

One pound of water evaporated from and at 212° is equivalent to 965.7 British Thermal Units.

To find the number of square feet of heating surface in tubes: Multiply the number of tubes by the diameter of a tube in inches, by its length in feet, and by .2618.

HOW TO FIGURE RADIATION

A good rule for estimating radiation is as follows:

For water: 1 square foot of radiation to every square foot of glass; 1 square foot of radiation to every 10 square feet of wall; 1 square foot of radiation to every 150 cubic feet of the contents of the room.

The foregoing rule refers to rooms with one exposure. In rooms with two exposures the ratio of cubical contents should be 1 to 100. For steam, take two-thirds of the above results for radiation.

It is best for a water and steam job to figure out the work as if it were to be for water, using the above water rule, and then for steam, take two-thirds of that result.

Allow ⅓ more radiation when determining the heating surface or size of boiler.

RULE FOR CALCULATING LENGTH OF BELTING BEFORE PULLEYS ARE PLACED IN POSITION

Add together the diameters of two pulleys, and multiply the sum by 3.14159. To half the result thus obtained add twice the distance from center of one pulley (or shaft) to center of the other pulley (or shaft).

EXAMPLE:—Given the distance between center of pulleys, 28 feet, 8 inches; diameter of pulleys, 52 inches and 46 inches. What is length of belt?

52+46=98×3.14159=307.87 inches.
307.87÷2=153.08 inches÷12=12.83 feet.
centers, $28\frac{1}{12}$ feet×2= 57.33 feet.

Answer, $70\frac{1}{12}$ feet.

RULES FOR CALCULATING SPEED OF PULLEYS

PROBLEM I.—The diameter of the driver and driven being given, to find the number of revolutions of the driven:

Rule.—Multiply the diameter of the driver by its number of revolutions, and divide the product by the diameter of the driven; the quotient will be the number of revolutions.

PROBLEM II.—The diameter and the revolutions of the driver being given to find the diameter of the driven, that shall make any given number of revolutions in the same time:

Rule.—Multiply the diameter of the driver by its number of revolutions, and divide the product by the number of revolutions of the driven; the quotient will be its diameter.

PROBLEM III.—To ascertain the size of the driver:

Rule.—Multiply the diameter of the driven by the number of revolutions you wish to make, and divide the product by the revolutions of the driver; the quotient will be the size of the driver.

The above rules are practically correct. Though owing to slip, elasticity, and thickness of the belt, the circumference of the driven seldom runs as fast as the driver.

Belts, like gears, have a pitch line, or a circumference of uniform motion. This circumference is within the thickness of the belt, and must be considered if pulleys differ greatly in diameter and a required speed is absolutely necessary.

METRIC SYSTEM

Measures of Weight

(Unit Gramme)

	Grains	Oz. Troy	Lb. Avor.	Cwt
Centigramme	0.15432	...	...	...
Decigramme	1.54323	0.003	...	...
Gramme	15.43235	0.032	0.002	...
Decagramme	154.32349	0.321	0.022	...
Hectogramme	1543.23488	3.215	0.220	0.001
Kilogramme	15432.34880	32.150	2.204	0.019

Measures of Length

(Unit Metre)

	Inches	Feet	Yard	Mile
Millimetre	0.03937	0.003	0.001	...
Centimetre	0.39371	0.032	0.010	...
Decimetre	3.93708	0.328	0.109	...
Metre	39.37079	3.280	1.093	...
Decametre	393.70790	32.808	10.936	0.006
Hectometre	3937.07900	328.089	109.363	0.062
Kilometre	39370.79000	3280.899	1093.633	0.621

Convenient Multiples for Conversion

To Convert		
Grains to Grammes	multiply by	.065
Ounces to Grammes	" "	28.35
Pounds to Grammes	" "	453.6
Pounds to Kilogrammes	" "	.45
Cwts. to Kilogrammes	" "	50.8
Tons to Kilogrammes	" "	1016.
Grammes to Grains	" "	15.4
Grammes to Ounces	" "	0.35
Kilogrammes to Ounces	" "	35.3
Kilogrammes to Pounds	" "	2.2
Kilogrammes to Cwts.	" "	.02
Kilogrammes to Tons	" "	.001
Inches to Millimetres	" "	25.4
Inches to Centimetres	" "	2.54
Feet to Metres	" "	.3048
Yards to Metres	" "	.9144
Yards to Kilometres	" "	.0009
Miles to Kilometres	" "	1.6
Millimetres to Inches	" "	.04
Centimetres to Inches	" "	.4
Metres to Feet	" "	3.3
Metres to Yards	" "	1.1
Kilometres to Yards	" "	1093.6
Kilometres to Miles	" "	.62

1 Yard=0.9144 metre. 1 Sq. Metre=1.196 sq. yard. 1 Litre=1.760 pints or 0.22 gals.

WEIGHTS AND MEASURES

Troy Weight

24 grains=1 pwt.
20 pwts.=1 ounce.
12 ounces=1 pound.
Used for weighing gold, silver and jewels.

Apothecaries' Weight

20 grains=1 scruple.
8 drams=1 ounce.
3 scruples=1 dram.
12 ounces=1 pound.
The ounce and pound in this are the same as in Troy weight.

Avoirdupois Weight

28$\frac{1}{3}\frac{1}{2}$ grains=1 dram.
16 drams=1 ounce.
16 ounces=1 pound.
24 pounds=1 quarter.
4 quarters=1 cwt.
2,080 pounds=1 short ton.
2,240 pounds=1 long ton.

Dry Measure

2 pints=1 quart.
4 pecks=1 bushel.
8 quarts=1 peck.
36 bushels=1 chaldron.

Liquid Measure

4 gills=1 pint.
2 pints=1 quart.
4 quarts=1 gallon.
31½ gallons=1 barrel.
2 barrels=1 hogshead.

Long Measure

12 inches=1 foot.
3 feet=1 yard.
5½ yards=1 rod.
40 rods=1 furlong.
8 furlongs=1 sta. mile.
3 miles=1 league.

Mariners' Measure

6 feet=1 fathom.
5,280 feet=1 statute mile.
120 fathoms=1 cable length.
6,085 feet=1 nautical mile.
7½ cable lengths=1 mile.

Miscellaneous

3 inches=1 palm.
4 inches=1 hand.
6 inches=1 span.
48 inches=1 cubit.
21.8 in.=1 Bible cubit.
2½ feet=1 military pace.

Square Measure

144 square inches=1 square foot.
40 square rods=1 rood.
9 square feet=1 square yard.
4 roods=1 acre.
30¼ square yards=1 square rod.
640 acres=1 square mile.

Surveyors' Measure

7.92 inches=1 link.
640 acres=1 sq. mile.
25 links=1 rod.
36 sq. miles (6 miles sq.)=1 township
10 sq. chains or 160 sq. rods=1 acre.
4 rods=1 chain.

Cubic Measure

1,728 cubic in.=1 cubic foot.
268.8 cubic in.=1 standard gallon.
27 cubic feet=1 cubic yard.
128 cubic feet=1 cord (wood).
2,150.42 cubic in.=1 standard bushel.
40 cubic feet=1 ton (shipping).
1 cubic foot=about four-fifths of a bushel.

WEIGHT OF ROUND AND SQUARE STEEL PER LINEAL FOOT

Size in Inches	Round	Square	Size in Inches	Round	Square	Size in Inches	Round	Square
0 1/32	.0026	.0033	2	10.68	13.60	4	42.73	54.40
" 1/16	.0104	.0133	" 1/16	11.36	14 46	" 1/16	44.07	56.11
" ⅛	.0417	.0531	" ⅛	12.06	15.35	" ⅛	45.44	57.85
" 3/16	.0938	.1195	" 3/16	12.78	16.27	" 3/16	46.83	59.62
" ¼	.1669	.2123	" ¼	13.52	17.22	" ¼	48.24	61.41
" 5/16	.2608	.3333	" 5/16	14.28	18.19	" 5/16	49.66	63.23
" ⅜	.3756	.4782	" ⅜	15.07	19.18	" ⅜	51.11	65.08
" 7/16	.5111	.6508	" 7/16	15.86	20.20	" 7/16	52.58	66.95
" ½	.6676	.8500	" ½	16.69	21.25	" ½	54.07	68.85
" 9/16	.8449	1.076	" 9/16	17.53	22.33	" 9/16	55.59	70.78
" ⅝	1 043	1.328	" ⅝	18.40	23.43	" ⅝	57.12	72.73
" 11/16	1.262	1.608	" 11/16	19.29	24.56	" 11/16	58.67	74.70
" ¾	1.502	1.913	" ¾	20.20	25.00	" ¾	60 25	76.71
" 13/16	1.763	2.245	" 13/16	21.12	26.90	" 13/16	61.84	78.74
" ⅞	2.044	2.603	" ⅞	22.07	28.10	" ⅞	63.46	80.81
" 15/16	2.347	2.989	" 15/16	23.04	29.34	" 15/16	65.10	82.89
1	2.670	3.400	3	24.03	30.60	5	66.76	85.00
" 1/16	3.014	3.838	" 1/16	25.04	31.89	" 1/16	68.44	87.14
" ⅛	3.379	4.303	" ⅛	26.08	33.20	" ⅛	70.14	89.30
" 3/16	3.766	4.795	" 3/16	27.13	34.55	" 3/16	71.86	91.49
" ¼	4.173	5.312	" ¼	28.20	35.92	" ¼	73.60	93.72
" 5/16	4.600	5.857	" 5/16	29.30	37.31	" 5/16	75.37	95.96
" ⅜	5.019	6.428	" ⅜	30.42	38.73	" ⅜	77.15	98.23
" 7/16	5.518	7.026	" 7/16	31.56	40.18	" 7/16	78.95	100.5
" ½	6.008	7.650	" ½	32.71	41.65	" ½	80.77	102.8
" 9/16	6.520	8.301	" 9/16	33.90	43.14	" 9/16	82.62	105.2
" ⅝	7.051	8.978	" ⅝	35.09	44.68	" ⅝	84.49	107.6
" 11/16	7.604	9.682	" 11/16	36.31	46.24	" 11/16	86.38	110.0
" ¾	8.178	10.41	" ¾	37.56	47.82	" ¾	88.29	112.4
" 13/16	8.773	11.17	" 13/16	38.81	49.42	" 13/16	90,22	114.9
" ⅞	9.388	11.95	" ⅞	40.10	51.05	" ⅞	92.17	117.4
" 15/16	10.02	12.76	" 15/16	41.40	52.71	" 15/16	94.14	119.9

These figures represent the theoretical weights of steel. Iron will run about 2 per cent. lighter.

WEIGHT OF ROUND AND SQUARE STEEL PER LINEAL FOOT

Size in Inches	Round	Square	Size in Inches	Round	Square	Size in Inches	Round	Square
6	96.14	122.4	**8**	171.0	217.6	**10**	267.0	340.0
" 1/16	98.14	125.0	" 1/16	173.6	221.0	" 1/16	270.4	344.3
" ⅛	100.2	127.6	" ⅛	176.3	224.5	" ⅛	273.8	348.5
" 3/16	102.2	130.2	" 3/16	179.0	228.0	" 3/16	277.1	352.9
" ¼	104.3	132.8	" ¼	181.8	231.4	" ¼	280.6	357.2
" 5/16	106.4	135.5	" 5/16	184.5	234.9	" 5/16	284.0	361.6
" ⅜	108.5	138.2	" ⅜	187.3	238.5	" ⅜	287.4	366.0
" 7/16	110.7	140.9	" 7/16	190.1	242.0	" 7/16	290.9	370.4
" ½	112.8	143.6	" ½	193.0	245.6	" ½	294.4	374.9
" 9/16	114.9	146.5	" 9/16	195.7	249.3	" 9/16	297.9	379.4
" ⅝	117.2	149.2	" ⅝	198.7	252.9	" ⅝	301.4	383.8
" 11/16	119.4	152.1	" 11/16	201.6	256.6	" 11/16	305.0	388.3
" ¾	121.7	154.9	" ¾	204.4	260.3	" ¾	308.6	392.9
" 13/16	123.9	157.8	" 13/16	207.4	264.1	" 13/16	312.2	397.5
" ⅞	126.2	160.8	" ⅞	210.3	267.9	" ⅞	315.8	402.1
" 15/16	128.5	163.6	" 15/16	213.3	271.6	" 15/16	319.5	406.8
7	130.9	166.6	**9**	216.3	275.4	**11**	323.1	411.4
" 1/16	133.2	169.6	" 1/16	219.3	279.3	" 1/16	326.8	416.1
" ⅛	135.6	172.6	" ⅛	222.4	283.2	" ⅛	330.5	420.9
" 3/16	137.9	175.6	" 3/16	225.4	287.0	" 3/16	334.3	425.5
" ¼	140.4	178.7	" ¼	228.5	290.9	" ¼	337.9	430.3
" 5/16	142.8	181.8	" 5/16	231.5	294.9	" 5/16	341.7	435.1
" ⅜	145.3	184.9	" ⅜	234.7	298.9	" ⅜	345.5	439.9
" 7/16	147.7	188.1	" 7/16	237.9	302.8	" 7/16	349.4	444.8
" ½	150.2	191.3	" ½	241.0	306.8	" ½	353.1	449.6
" 9/16	152.7	194.4	" 9/16	244.2	310.9	" 9/16	357.0	454.5
" ⅝	155.2	197.7	" ⅝	247.4	315.0	" ⅝	360.9	459.5
" 11/16	157.8	200.9	" 11/16	250.6	319.1	" 11/16	364.8	464.4
" ¾	160.3	204.2	" ¾	253.9	323.2	" ¾	368.6	469.4
" 13/16	163.0	207.6	" 13/16	257.1	327.4	" 13/16	372.6	474.4
" ⅞	165.6	210.8	" ⅞	260.4	331.6	" ⅞	376.6	479.5
" 15/16	168.2	214.2	" 15/16	263.7	335.8	" 15/16	380.6	484.5

These figures represent the theoretical weights of steel. Iron will run about 2 per cent. lighter.

*WEIGHT OF FLAT ROLLED STEEL, PER LINEAL FOOT

Thickness Inches	WIDTH—INCHES																							
	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4	4¼	4½	4¾	5
1/16	.1060	.1381	.1594	.1859	.212	.2391	.2656	.292	.319	.346	.372	.425	.478	.531	.584	.638	.691	.744	.80	.85	.90	.96	1.01	1.06
⅛	.2125	.2656	.3188	.3720	.4250	.4782	.5312	.585	.638	.692	.744	.850	.96	1.06	1.17	1.28	1.38	1.49	1.59	1.70	1.81	1.91	2.02	2.13
3/16	.319	.399	.478	.558	.638	.717	.797	.875	.957	1.04	1.15	1.28	1.44	1.59	1.75	1.91	2.07	2.23	2.39	2.55	2,71	2.87	3.03	3.19
¼	.425	.531	.636	.743	.850	.957	1.06	1.17	1.28	1.38	1.49	1.70	1.92	2.12	2.34	2.55	2.76	2.98	3.19	3.40	3.61	3.83	4.04	4.25
5/16	.531	.664	.797	.929	1.06	1.20	1.33	1.46	1.59	1.73	1.86	2.12	2.39	2.65	2.92	3.19	3.45	3.72	3.99	4.25	4.52	4.78	5.05	5.31
⅜	.638	.797	.957	1.116	1.28	1.43	1.59	1.76	1.92	2.08	2.23	2.55	2.87	3.19	3.51	3.83	4.15	4.47	4.78	5.10	5.42	5.74	6.06	6.38
7/16	.744	.929	1.116	1.302	1.49	1.68	1.86	2.05	2.23	2.42	2.60	2.98	3.35	3.72	4.09	4.46	4.83	5.20	5.58	5.95	6.32	6.70	7.07	7.44
½	.850	1.06	1.275	1.487	1.70	1.92	2.12	2.34	2.55	2.72	2.98	3.40	3.83	4.25	4.67	5.10	5.53	5.95	6.38	6.80	7.22	7.65	8.08	8.50
9/16	.957	1.20	1.434	1.674	1.92	2.15	2.39	2.63	2.87	3.11	3.35	3.83	4.30	4.78	5.26	5.74	6.22	6.70	7.17	7.65	8.13	8.61	9.09	9.57
⅝	1.06	1.33	1.594	1.859	2.12	2.39	2.65	2.92	3.19	3.46	3.72	4.25	4.78	5.31	5.84	6.38	6.91	7.44	7.97	8.50	9.03	9.57	10.10	10.63
11/16	1.17	1.46	1.753	2.045	2.34	2.63	2.92	3.22	3.51	3.80	4.09	4.67	5.26	5.84	6.43	7.02	7.60	8.18	8.76	9.35	9.93	10.52	11.11	11.69
¾	1.28	1.60	1.913	2.232	2.55	2.87	3.19	3.51	3.83	4.15	4.47	5.10	5.75	6.38	7.02	7.65	8.29	8.93	9.57	10.20	10.84	11.48	12.12	12.75
13/16	1.38	1.73	2.072	2.417	2.76	3.11	3.45	3.80	4.14	4.49	4.84	5.53	6.21	6.90	7.60	8.29	8.98	9.67	10.36	11.05	11.74	12.43	13.12	13.81
⅞	1.49	1.86	2.232	2.604	2.98	3.35	3.72	4.09	4.47	4.84	5.20	5.95	6.69	7.44	8.18	8.93	9.67	10.41	11.16	11.90	12.65	13.39	14.13	14.87
15/16	1.60	1.99	2.391	2.789	3.19	3.59	3.99	4.39	4.78	5.18	5.58	6.38	7.18	7.97	8.77	9.57	10.36	11.16	11.95	12.75	13.55	14.34	15.14	15.94
1	1.70	2.13	2.55	2.98	3.40	3.83	4.25	4.68	5.10	5.53	5.95	6.80	7.65	8.50	9.35	10.20	11.05	11.90	12.75	13.60	14.45	15.30	16.15	17.00
1 1/16	1.81	2.26	2.710	3.161	3.61	4.064	4.52	4.97	5.42	5.87	6.32	7.22	8.13	9.03	9.93	10.84	11.74	12.65	13.55	14.45	15.35	16.26	17.16	18.00
1⅛	1.91	2.39	2.868	3.347	3.83	4.304	4.78	5.26	5.74	6.22	6.70	7.65	8.61	9.57	10.52	11.48	12.43	13.39	14.34	15.30	16.26	17.22	18.17	19.13
1 3/16	2.02	2.52	3.03	3.533	4.04	4.54	5.05	5.56	6.06	6.56	7.07	8.08	9.09	10.10	11.11	12.12	13.12	14.13	15.14	16.15	17.16	18.17	19.18	20.19
1¼	2.12	2.66	3.19	3.72	4.25	4.79	5.31	5.85	6.38	6.91	7.44	8.50	9.57	10.63	11.69	12.75	13.81	14.87	15.94	17.00	18.06	19.13	20.19	21.25
1 5/16	2.23	2.79	3.35	3.91	4.46	5.02	5.58	6.14	6.69	7.25	7.81	8.93	10.04	11.16	12.27	13.39	14.50	15.62	16.74	17.85	18.96	20.08	21.20	22.32
1⅜	2.34	2.92	3.51	4.09	4.67	5.26	5.84	6.43	7.02	7.60	8.18	9.35	10.52	11.69	12.85	14.03	15.20	16.36	17.53	18.70	19.87	21.04	22.21	23.38
1 7/16	2.45	3.06	3.67	4.28	4.89	5.50	6.11	6.72	7.34	7.94	8.56	9,78	11.00	12.22	13.44	14.66	15.88	17.10	18.33	19.55	20.77	21.99	23.22	24.44
1½	2.55	3.19	3.83	4.47	5.10	5.74	6.38	7.02	7.65	8.29	8.93	10.20	11.48	12.75	14.03	15.30	16.58	17.85	19.13	20.40	21.68	22.95	24.23	25.50
1 9/16	2.66	3.32	3.99	4.65	5.32	5.98	6.64	7.31	7.97	8.74	9.30	10.63	11.95	13.28	14.61	15.94	17.27	18.60	19.92	21.25	22.58	23.91	25.24	26.57
1⅝	2.76	3.45	4.15	4.84	5.52	6.22	6.90	7.60	8.29	8.98	9.67	11.05	12.43	13.81	15.19	16.58	17.96	19.34	20.72	22.10	23.48	24.87	26.25	27.63
1 11/16	2.87	3.59	4.31	5.02	5.74	6.46	7.17	7.89	8.61	9.33	10.04	11.47	12.91	14.34	15.78	17.22	18.65	20.08	21.51	22.95	24.38	25.82	27.26	28.69
1¾	2.98	3.72	4.47	5.21	5.95	6.70	7.44	8.19	8.93	9.67	10.42	11.90	13.40	14.88	16.37	17.85	19.34	20.83	22.32	23.80	25.29	26.78	28.27	29.75
1 13/16	3.08	3.85	4.62	5.46	6.16	6.93	7.70	8.48	9.24	10.02	10.79	12.33	13.86	15.40	16.95	18.49	20.03	21.57	23.11	24.65	26.19	27.73	29.27	30.81
1⅞	3.19	3.99	4.79	5.58	6.38	7.17	7.97	8.77	9.57	10.36	11.15	12.75	14.34	15.94	17.53	19.13	20.72	22.31	23.91	25.50	27.10	28.69	30.28	31.87
1 15/16	3.30	4.12	4.94	5.77	6.59	7.42	8.24	9.06	9.88	10.71	11.53	13.18	14.83	16.47	18.12	19.77	21.41	23.06	24.70	26.35	28.00	29.64	31.29	32.94
2	3.40	4.25	5.10	5.95	6.80	7.65	8.50	9.35	10.20	11.05	11.90	13.60	15.30	17.00	17.80	20.40	22.10	23.80	25.50	27.20	28.90	30.60	32.30	34.00

* These figures are the theoretical weights, based on 489.6 lbs. per cubic foot of steel. Iron will run about 2% lighter.

*WEIGHT OF FLAT ROLLED STEEL, PER LINEAL FOOT—Continued

Thickness Inches	WIDTH—INCHES																							
	5 ¼	5 ½	5 ¾	6	6 ¼	6 ½	6 ¾	7	7 ¼	7 ½	7 ¾	8	8 ¼	8 ½	8 ¾	9	9 ¼	9 ½	9 ¾	10	10¼	10½	10¾	11
1/16	1.116	1.169	1.222	1.275	1.328	1.381	1.434	1.487	1.540	1.594	1.647	1.70	1.753	1.806	18.59	1.913	1.965	2.019	2.078	2.135	2.178	2.232	2.235	2.338
1/8	2.232	2.338	2,444	2.550	2.656	2.762	2.869	2.975	3.081	3.188	3 294	3.40	3.506	3.612	3,720	3.826	3.931	4.037	4.144	4.250	4.356	4.463	4.569	4.676
3/16	3.35	3.51	3.67	3.83	3.99	4.14	4.30	4.46	4.62	4.78	4.94	5.10	5.26	5.42	5,58	5.74	5.90	6.06	6.22	6.38	6.54	6.70	6.86	7.02
¼	4.46	4.67	4.89	5.10	5.31	5.53	5.74	5.95	6.16	6.36	6.58	6.80	7.01	7.22	7.43	7.65	7.86	8.08	8.29	8.50	8.71	8.92	9.14	9.34
5/16	5.58	5.84	6.11	6.38	6.64	6.90	7.17	7.44	7.70	7.97	8.23	8.50	8.76	9.03	9.29	9.56	9.83	10.10	10.36	10.62	10.89	11.16	11.42	11.68
⅜	6.69	7.02	7.34	7.65	7.97	8.29	8.61	8.93	9.25	9.57	9.88	10.20	10.52	10.84	11.16	11.48	11.80	12.12	12.44	12.75	13.07	13.39	13.71	14.03
7/16	7.81	8.18	8.56	8.93	9.29	9.67	10.04	10.41	10.78	11.16	11.53	11.90	12.27	12.64	13.02	13.40	13.76	14.14	14.51	14.88	15.25	15.62	15.99	16.36
½	8.93	9.35	9.77	10.26	10.63	11.05	11.48	11.90	12.32	12.75	13.18	13.60	13.03	14.44	14.87	15.30	15.73	16.16	16.58	17.00	17.42	17.85	18.28	18.70
9/16	10 04	10.52	11.00	11.48	11.95	12.43	12.91	13.39	13.86	14.34	14.82	15.30	15.78	16.26	16.74	17.22	17.69	18.18	18.65	19.14	19.61	20.08	20.56	21.02
⅝	11.16	11.69	12.22	12.75	13.28	13.81	14.34	14.87	15.40	15.94	16.47	17.00	17.53	18.06	18.59	19.13	19.65	20.19	20.72	21.35	21.78	22.32	22.85	23.38
11/16	12.27	12.85	13.44	14.03	14.61	15.20	15.78	16.36	16.94	17.53	18.12	18.70	19.28	19.86	20.45	21.04	21.62	22.21	22.79	23.38	23.96	24.54	25.13	25.70
¾	13.39	14.03	14.67	15.30	15.94	16.58	17.22	17.85	18.49	19.13	19.77	20.40	21.04	21.68	22.32	22.96	23.59	24.23	24.86	25.50	26.14	26.78	27.42	28.05
13/16	14.50	15.19	15.88	16.58	17.27	17.95	18.65	19,34	20.03	20.72	21.41	22.10	22.79	23.48	24.17	24.86	25.55	26.24	26.94	27.62	28.32	29.00	29.69	30.40
⅞	15,62	16.36	17.10	17.85	18.60	19.34	20.08	20.83	21.57	22.32	23.05	23.80	24.55	25.30	26.04	26.78	27.52	28.26	29.01	29.75	30.50	31.34	31.98	32.72
15/16	16.74	17.53	18.33	19.13	19.92	20.72	21.51	22.32	23.11	23.91	24.70	25.50	26.30	27.10	27.89	28.69	29.49	30.28	31.08	31.88	32.67	33.48	34.28	35.06
1	17.85	18.70	19.55	20.40	21 25	22.10	22.95	23.80	24.65	25.50	26.35	27.20	28.05	28.90	29.75	30.60	31.45	32.20	33.15	34.00	34.85	35.70	36.55	37.40
1 1/16	18.96	19.87	20.77	21.68	22.58	23.48	24.39	25.29	26.19	27.10	28.00	28.90	29.80	30.70	31.61	32 52	33.41	34.32	35.22	36.12	37.03	37.92	38.83	39.74
1 ⅛	20.08	21.04	21.99	22.95	23.91	24.87	25.82	26.78	27.73	28.68	29.64	30.60	31.56	32.52	33.47	34.43	35.38	36.34	37.29	38.25	39.21	40,17	41.12	42.08
1 3/16	21.20	22.21	23.22	24.23	25.23	26.24	27.25	28.26	29.27	30.28	31.29	32.30	33.31	34.32	35.33	36.34	37.35	38.36	39.37	40.38	41.39	42.40	43.40	44.42
1 ¼	22.32	23.38	24.44	25.50	26.56	27.62	28.69	29.75	30.81	31.88	32.94	34.00	35.06	36,12	37.20	38.26	39.31	40.37	41.47	42.50	43.56	44.63	45.69	46.76
1 5/16	23.43	24.54	25.66	26.78	27.90	29.01	30.12	31.22	32.35	33.48	34.59	35.70	36.81	37.93	39.05	40.16	41.28	42.40	43.52	44.64	45.75	46.86	47.97	49.08
1 ⅜	24.54	25.71	26.88	28.05	29.22	30.39	21.56	32.72	33.89	35.06	36.23	37.40	38.57	39.74	40.91	42.08	43.25	44.41	45.58	46.75	47.92	49.08	50.25	51.42
1 7/16	25.66	26.88	28.10	29.33	30.55	51.77	32.90	34.21	35.44	36.66	37.88	39.10	40.32	41.54	42.77	44.00	45.22	46.44	47.66	48 88	50.10	51.32	52.54	53.76
1 ½	26.78	28.05	29.33	30.60	31.88	33.15	34.43	35.70	36.98	38.26	39.53	40.80	42.08	43.35	44.63	45.90	47.18	48.45	49.73	51.00	52.28	53.55	54.83	56 10
1 9/16	27.89	29.22	30.55	31.88	33.20	34.53	35.86	37.19	38.51	39.84	41.17	42.50	43.83	45.16	46.49	47.82	49.14	50.48	51.80	53.14	54.46	55.78	57.11	58.42
1 ⅝	29.01	30.39	31.77	33.15	34.53	35.91	37.99	38.67	40.05	41.44	42.82	44.20	45.58	46.96	48.34	49.73	51.10	52.49	53.87	55.25	56.63	58.02	59.40	60.78
1 11/16	30.12	31.55	32.99	34.43	35.86	37.30	38.73	40.16	41.59	43.03	44.47	45.90	47.33	48.76	50.20	51.64	53.07	54.51	55.94	57.38	58.81	60.24	61.68	63.10
1 ¾	31.24	32.73	34.22	35.70	37.19	38.68	40.17	41.65	43.14	44.63	46.12	47.60	49.09	50.58	52.07	53.56	55.04	56.53	58.01	59.50	60.99	62.48	63.97	65.45
1 13/16	32.35	33.89	35.43	36.98	38.52	40.05	41.60	43.14	44.68	46.22	47.76	49.30	50.84	52.38	53.92	55.46	57.00	58.54	60.09	61.62	63.17	64.70	66.24	67.80
1 ⅞	33.47	35.06	36.65	38.25	38.85	41.44	43.03	44.63	46.22	47.82	49.40	51.00	52.60	54 20	55.79	57.38	58.97	60.56	62.16	63.75	65.35	66.94	68.53	60.12
1 15/16	34.50	36.23	37.88	39.53	41.17	42 82	44.46	46.12	47.76	49.41	51.05	52.70	54.35	56.00	57.64	59.29	60.94	62.58	64.23	65.88	67.52	69.18	70.83	72.46
2	35.70	37.40	39.10	40.80	42.50	44.20	45.90	47.60	49.30	51.00	52.70	54.40	56.10	57.80	59.50	61.20	62.90	64.60	66.30	68.00	69.70	71.40	73.10	74.80

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* These figures are the theoretical weights, based on 489.6 lbs. per cubic foot of steel. Iron will run about 2% lighter.

INDEX

Agitators 23
Blungers 24-25-30
Ball Mills 52-55-60-61
Brackets 155
Boilers, Steam 121
Clay Mixing 8-9-15-16
Clay Washing 11-13-26-27
Chaser Mills 45
Color or Glaze Mills 56-59
Clay and Shale Crushers 62
Conveying Machinery 144
Couplings 145
Cones 157-161
Decorators' Printing Press 102
Disintegrators, Clay 48-49
Dies and Moulds 115-116
Dryers 140-141
Equipments 7
Engines 128-139
Filter Presses 17-19
Fret Grinder 45
Friction Clutches 149
Generators 127
Gears 156
Grinders, Surface or Sand 66-70
Grates, Shaking 122
Heaters 123
Hangers 150-152
Introduction 5
Iron Work 142-143
Jiggers 78-93
Lathes 95-100-104-105
Mixing and Washing Outfits 14
Moulds 115-116
Metric System 166
Pans, Wet and Dry 42-44
Pillow Blocks 153-154
Polishing or Buffing Wheels 94
Presses, Screw 106-114

INDEX—Continued

Press, Sagger 117-120
Presses, Tile 108
Pugging Machines 31-33
Pumps 34-41
Pulverizers 63-65
Pulleys 146
Reference 164
Rules for Calculating 165
Slip Houses 10
Sifter or Lawn 28-29
Stoves, Steam 101
Sheaves 147
Sole Plates 154
Title 2
Terms 4
Tanks 124
Temperatures 162
Useful Information 163
Valves 72-73
Vulcanizers 125-126
Washing Machines 21
Wad Machines 43-44-50-51
Whirlers 74-75
Weights and Measures 167-171

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CLAY-WORKING MACHINERY

Pottery
Electric Porcelain, Tile Making
and Clay Washing

MACHINERY

Machinery for grinding, mixing, washing and forming clay, flint, spar, plumbago, refractory substances and materials of like nature.

WE ARE ENGINEERS TO
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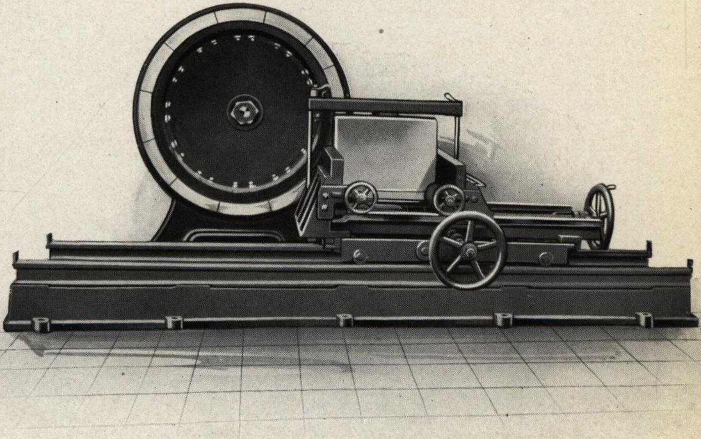
Trenton, New Jersey, U.S.A.

OUR IMPROVED 42″ HORIZONTAL CARBORUNDUM GRINDER



Class	Weight	Export Weight	Floor Space	Speed	Pulley	H. P.
Double Machine	11,450	12,000	10′ 6″ x 12′	375	20″ x 8½″	15
Single Machine	7,000	7,500	12′ x 6′ 6″	375	20″ x 8½″	10

THIS machine was especially designed to meet the long-felt want of the sanitary ware manufacturer for a machine that would decrease the expense of production and it is fast replacing the old-style disc or sand grinder by its increase both in quantity and quality of work produced and is a great saver in power.

The piece of ware to be ground is held in a vise that is a part of a roller-bearing traveling carriage, which is propelled past the cutting edge of wheel, thereby insuring a perfectly straight face, which is almost impossible to get with any other type of grinder. Cut shows tank in position ready to be ground.

We make this machine either with a single or double grinding side, as desired.

Further information, if desired, in regard to size, etc., on application.

WE ARE CLAY-WORKING MACHINERY ENGINEERS

WE manufacture a complete line of clay washing and refining equipment and if you have any knotty problems submit them to us as our 35 years of experience has made us experts in this line.

We lay out plants including buildings, necessary machinery, engines and boilers ready for operation.

Full line of transmission carried in stock.

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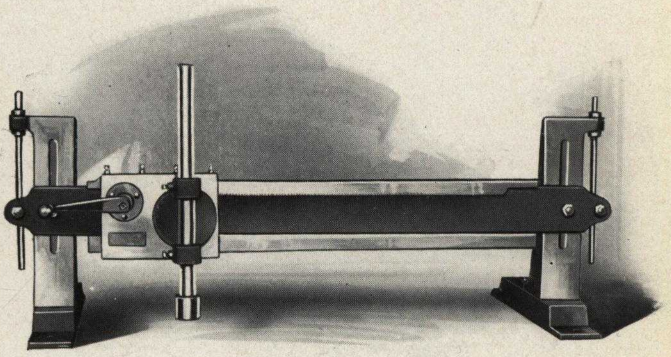
OUR IMPROVED EMERY WHEEL SHAVING MACHINE



THIS cut illustrates our Emery Wheel Shaver, which is used for shaving wheels to desired thickness. It is built of the very best material and workmanship throughout having machine-cut gears and racks and fills a long-felt want for emery wheel manufacturers.

PRICE ON APPLICATION

It is built in one size only as follows:

Distance between housings	Weight	Export Weight
3 feet, 8½ inches	600 pounds	750 pounds

WE build a full line of machinery for the manufacturing of emery wheels including jiggers, pug mills, grinding machinery, presses, etc. When in the market for anything in this line kindly advise us as we would be only to pleased to submit quotations on your requirements, and we know we can interest you both in price and quality of production. If you do not have our complete catalog kindly advise and we will forward you a copy, which we know will be of interest to you.

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IMPROVED POWER SAGGER PRESS

THESE cuts represent our Electric-driven Power Sagger Press which can also be arranged to be driven direct from main line shaft where electric current is not available.

These presses are made in three sizes, viz.: Nos. 1, 2 and 3, and are used for the making or forming of any article where great pressure is required, such as saggers that are used in electric porcelain, tile, general ware and sanitary potteries, emery wheel works, etc.

The construction of these presses is of the usual CROSSLEY STANDARD throughout, being very rigid and self-contained in every respect. All working parts in the head are made of chrome nickel steel and the gearing is machine cut. The crosshead is fitted with adjustable bronze gibbs, which enables the operator to keep the plunger in perfect alignment with the bed of the press at all times. This type of construction means long life to the machine and also reduces the cost of up-keep to a minimum. With these presses we are enabled to exert a greater pressure with less horse-power than any other machine on the market and can be set up in any desired part of factory requiring but very little head room.

The saggers are made from one piece of clay cut off at the pug mill the proper length to give you the exact weight, it is then placed in die and pressed to shape.

We will positively guarantee these machines to produce a far superior sagger in every way that will stand more fires than the ordinary hand-made saggers at a saving of from 50 to 75%.

The No. 1 Press will make the following size saggers or other pieces of a like size. (Saggers given below are those common to the Electric Porcelain and Tile Trade).

Oblong	Round		Oval
	Diameter	Height	
12¾″ x 8″ x 8″	14″	8″	15″ x 12″ x 6½″
13¼″ x 10″ x 8″	12″	8″	15″ x 12″ x 8″
14″ x 9″ x 8″	11″	8″	
13″ x 8″ x 8″	10″		
15⅜″ x 8″ x 8″			

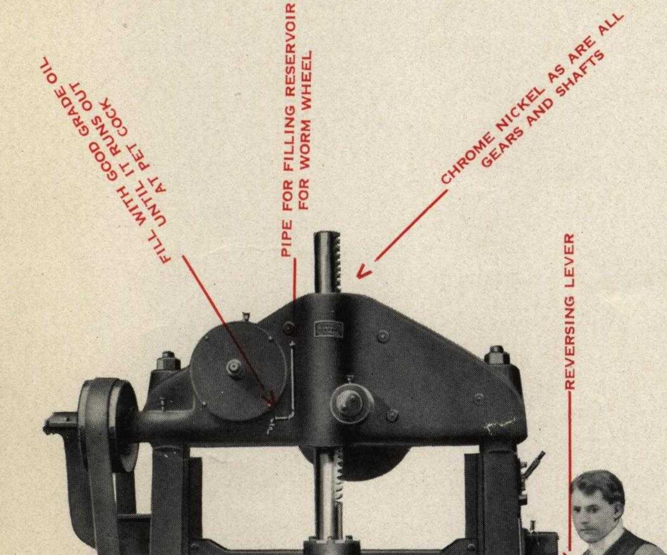
The No. 2 Press is used for the making of intermediate size saggers, *i.e.*, those that are too large for the No. 1 Press and not large enough for the No. 3.

The No. 3 Press will make the following size saggers or other pieces of a like size:

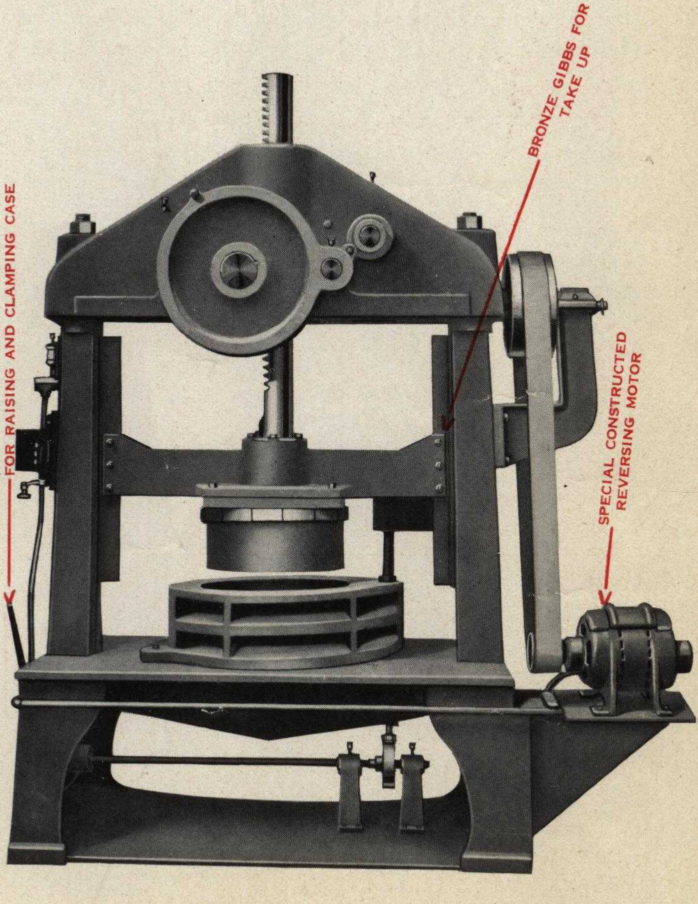
SANITARY SAGGERS

Oval 24⅝″ x 17¾″ x 10¾″ high.
Oval 22¾″ x 16$\frac{9}{16}$″ x 9″ high.
Oval 28⅝″ x 18⅜″ x 11″ high.
Oval 27¾″ x 17″ x 9½″ high.

(OVER)


FILL WITH GOOD GRADE OIL UNTIL IT RUNS OUT AT PET COCK
PIPE FOR FILLING RESERVOIR FOR WORM WHEEL
CHROME NICKEL AS ARE ALL GEARS AND SHAFTS
REVERSING LEVER

No. 3 PRESS (Front View)
Showing Sagger, $21\frac{3}{16}''$ x $14\frac{3}{16}''$ x $7\frac{3}{4}''$ High


FOR RAISING AND CLAMPING CASE
BRONZE GIBBS FOR TAKE UP
SPECIAL CONSTRUCTED REVERSING MOTOR

No. 3 PRESS (Back View)

(OVER)

SANITARY SAGGERS—Continued

Oblong 29½″ x 11¾″ x 11¾″ high.
Oblong 24¾″ x 19¾″ x 9¼″ high.
Oblong 28⅛″ x 11⅝″ x 10½″ high.
Oblong 23¾″ x 19⅜″ x 8¼″ high.
Oval 28½″ x 19½″ x 11¼″ high.
Lavatory Special, 30″ x 21¾″ x 9″ high.

GENERAL WARE SAGGERS

Oval 16$\frac{7}{16}$″ x 10$\frac{7}{16}$″ x 9″.
Double Banjos 17$\frac{11}{16}$″ x 9⅜″.
Double Banjos 16$\frac{3}{16}$″ x 9½″.
Double Banjos 19⅜″ x 9⅜″.
Double Banjos 17$\frac{5}{16}$″ x 9½″.
Single Banjos 18⅜″ x 12″.
Single Banjos 21⅛″ x 10$\frac{11}{16}$″.
Single Banjos 16⅝″ x 8¼″.
Single Banjos 18⅞″ x 9⅜″.
Single Banjos 15½″ x 10¾″.

(All Sagger Dimensions given are Inside Measurements)

DIMENSIONS OF PRESSES

Size	Floor Space	Height	Weight	Export Weight	H. P.	Capacity
No. 1	6′x 3′	7′ 6″	5,400	5,700	3	
No. 2	7′x 3′	10′ 9″	8,000	8,450	5	
No. 3	8′x 3′	10′ 9″	9,700	10,700	7½	

In ordering presses give largest size sagger you wish to make

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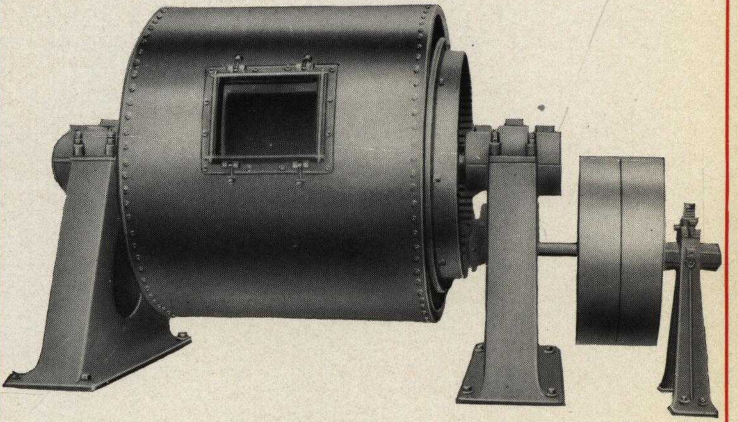
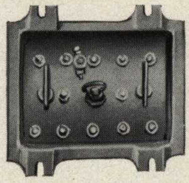
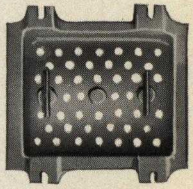
BALL MILLS OR GRINDING CYLINDERS





Style "A" or Plain Solid Bearing Type



Our Ball Mills or Grinding Cylinders are used for the grinding of flint, spar, color, glaze, sand or any other material of a like nature which is required to be pulverized or ground and which can be reduced to any degree of fineness in these mills.

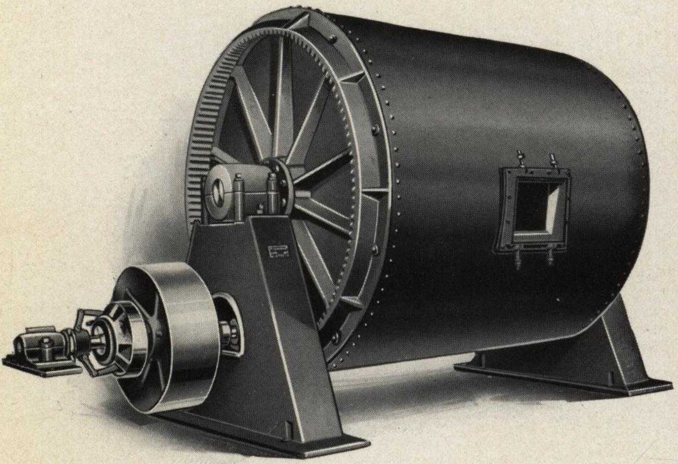
NOTE THE LENGTH OF BEARINGS AND RIGIDITY OF CONSTRUCTION.

Our Style "A" or Plain Solid Bearing Type Mills are made in three sizes, viz., 2', 3' 6" and 4' 6". These mills are lined with silex lining, which is the hardest and best cutting substance known, or can be lined with hickory or porcelain blocks.

When ordering state the kind of lining, also whether friction clutch or tight and loose pulley drive is wanted.

Size Style "A"	Weight	Export Weight	Height	Pinion Shaft Speed	Floor Space	Pulley
2'	1,244 lbs.	1,334 lbs.	3½'	45	4' x 2½'	24" x 4"
3' 6"	5,500 "	5,700 "	4½'	175	4' x 6'	18" x 4"
4' 6"	7,070 "	7,200 "	5½'	125	5' x 10'	24" x 8"

BALL MILLS OR GRINDING CYLINDERS



Style "B" or Hardened and Ground Roller Bearing Type

The above cut shows our style "B" Hardened and Ground Roller Bearing Type Ball or Grinding Cylinder.

This Type Mill is made in two sizes, viz., 4′ 6″ and 6′ 8″ and is lined with silex, hickory or porcelain, whichever is preferred. The driving pulley is fitted with a friction clutch, which enables the operator to start and stop the mill in any position desired.

You will also note that this style "B" mill is fitted with hardened and ground roller bearings enclosed in a dust-proof casing, which not only means a large saving in fuel and power; but reduces the cost of upkeep to a minimum.

Size Style "B"	Weight	Export Weight	Height	Pinion Shaft Speed	Floor Space	Pulley
4′ 6″	7,500 lbs.	7,800 lbs.	5′ 6″	125	5′ x 11′	24″ x 8″
6′ 8″	17,900 "	18,900 "	8′	150	8′ x 15′	30″ x 10″

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WE manufacture a complete line of clay washing and refining equipment and if you have any knotty problems submit them to us as our 35 years of experience has made us experts in this line.

We lay out plants including buildings, necessary machinery, engines and boilers ready for operation.

Full line of transmission carried in stock.

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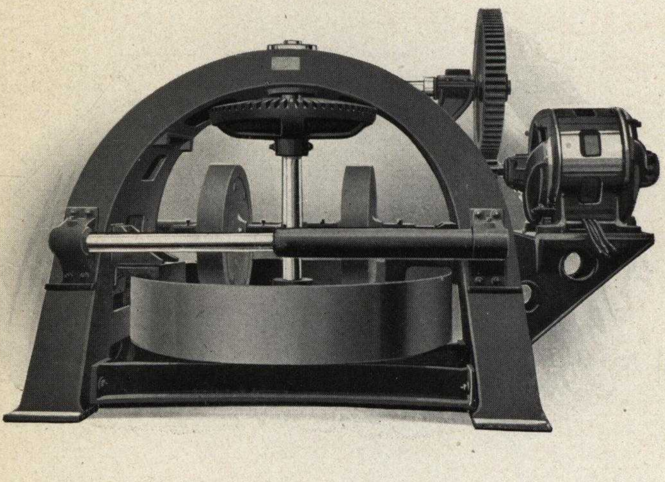
STYLE "B" GROG MILL OR DRY PAN



THE above cut shows our Motor Driven Style "B" Grog Mill or Dry Pan, which is one of the heaviest and most substantially built machines of this character on the market. The frame is heavily ribbed and is constructed so that the entire machine is self contained in every respect.

These mills are used for grinding and breaking up fire bricks, saggers, sewer pipe, etc., which can be ground to suit any requirements by the application of proper size screen plates.

This type machine is fitted with independent crusher wheels, that is, when a piece of material is being crushed under one wheel it does not effect the other, which not only increases the life of the machine but reduces the cost of repairs to a minimum.

We make this mill in three sizes, as given below, with either motor drive, jaw or friction clutch or tight and loose pulley.

Size	Height	Weight	Export Weight
4′	5′ 3″	6,000 lbs.	6,400 lbs.
6′	8′	13,000 "	13,500 "
7′	9′ 5″	17,600 "	18,500 "

Floor Space	Driving Pulley	Capacity per 10 hours	H. P.	Pinion Shaft Speed
4′ 6″ x 7′	24″ x 8″	40 to 60 tons	8	125
6′ 6″ x 9′	30″ x 9″	80 to 90 tons	15	140
10′ 6″ x 6′	36″ x 12″	90 to 110 tons	20	140

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Trenton, New Jersey, U.S.A.

OUR IMPROVED No. 6 SCREW PRESS

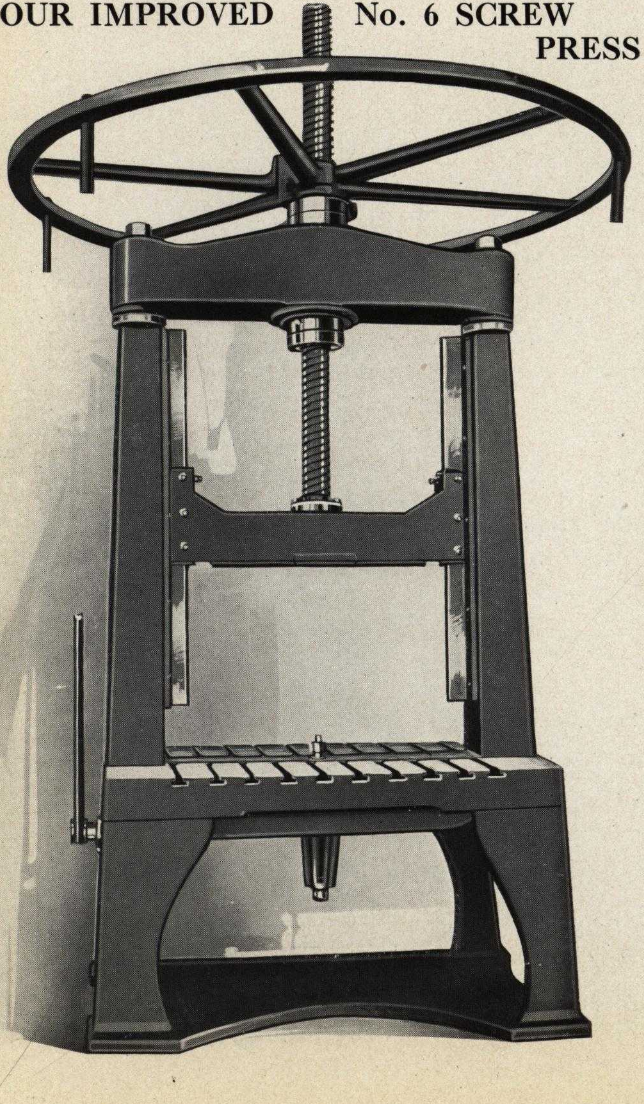
THIS machine was designed for the manufacture of large tile blocks, bricks or medium size saggers.

It is fitted with a ball-bearing nut, the screw remaining stationary and the nut revolving with a ball race thrust top and bottom, which reduces the friction to a minimum and makes same easy of operation for a machine of this size.

Full sizes and information will be furnished upon application.

No.	Weight	Export Weight	Total Height	Distance Between Housings	Height Between Bed and Cross Rail	Floor Space	Dia. of Hand Wheel
6	7,000 lbs.	7,400 lbs.	11′ 8″	35″	To suit requirements	5′ 1″ x 3′	7′

OUR IMPROVED No. 6 SCREW PRESS



THE CROSSLEY MACHINE CO.

WE ARE CLAY-WORKING MACHINERY ENGINEERS

WE manufacture a complete line of clay washing and refining equipment and if you have any knotty problems submit them to us as our 35 years of experience has made us experts in this line.

We lay out plants including buildings, necessary machinery, engines and boilers ready for operation.

Full line of transmission carried in stock.

ESTABLISHED 1879 INCORPORATED 1896

The
The Crossley Machine Co.
(INCORPORATED)

MANUFACTURERS OF
CLAY-WORKING
MACHINERY

Pottery
Electric Porcelain, Tile Making
and Clay Washing
MACHINERY

Machinery for grinding, mixing, washing and forming clay, flint, spar, plumbago, refractory substances and materials of like nature.

WE ARE ENGINEERS TO
THE CLAY WORKERS

MAIN OFFICE AND WORKS
Trenton, New Jersey, U.S.A.

IMPROVED CERAMIC TILE PRESS

THIS cut shows our Improved Tile Press, which is used for the pressing of plain or ceramic tiles and is very rapid in operation.

We would call your attention to several of the working parts of this machine, which we claim are far superior to any machine, of a like character, on the market to-day and which are as follows:—

1st. The screw which is of hammered steel, is fitted with a deep cut thread and works in a bronze nut, which is fastened in the cross head. This insures easy operation and long life to the machine.

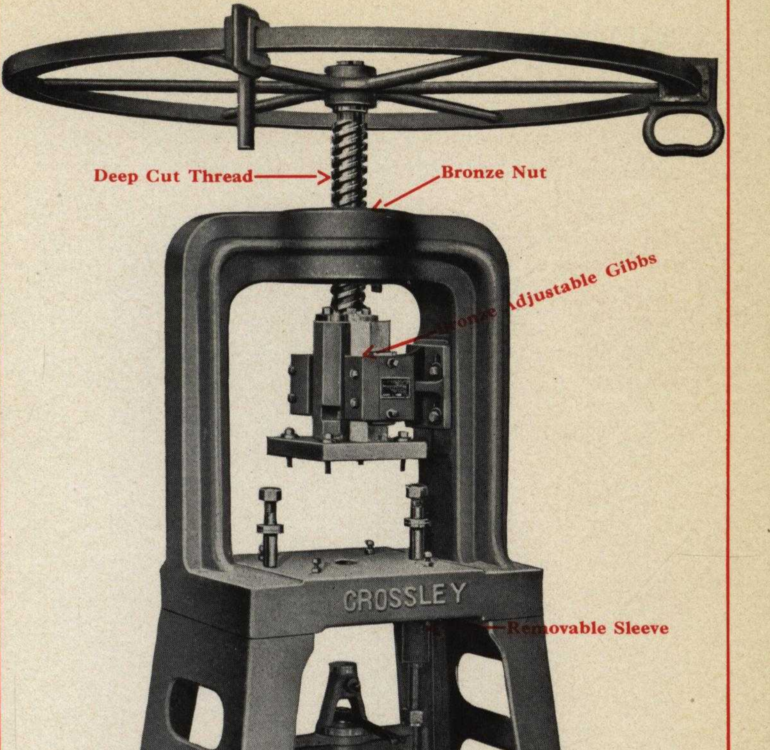
2d You will note the press is fitted with bronze gibbs which are adjustable so you can take up the wear or lost motion and always keep the plunger in perfect alignment with the bed of the press.

3d The press is equipped with an attachment so that you can either use same with a sliding plunger or sliding case without taking from or adding to.

4th It is machined all over, the bed being machined perfectly true both top and bottom, the legs are also machined on top and bottom also the base plate.

5th You will also notice that in underneath the press, where the lifter rods work, there is a removable sleeve, which can be removed easily and bushed when worn without disturbing the rest of the press.

Size	Floor Space	Distance between Columns	Diameter of Hand Wheel	Domestic Shipping Weight	Export Shipping Weight	Capacity
No. 1	2′6″x2′9″	15″	Operated by Lever	1,360 lbs.	1,575 lbs.	
No. 2	4′10″x38″	19″	Operated by Hand Wheel 5′	3,000 lbs.	3,500 lbs.	



IMPROVED No. 2 CERAMIC TILE PRESS

THE CROSSLEY MACHINE CO.

WHEN in the market for any of the following give us an opportunity of quoting you, as we are Clay-Working Machinery Engineers.

We manufacture a complete line of clay washing and refining equipment and if you have any knotty problems submit them to us as our 35 years of experience has made us experts in this line.

We lay out plants including buildings, necessary machinery, engines and boilers ready for operation.

Full line of transmission carried in stock.

Agitators
Blungers
Ball Mills
Brackets
Boilers, Steam
Clay Mixing
Clay Washing
Chaser Mills
Color or Glaze Mills
Clay and Shale Crushers
Conveying Machinery
Decorators' Printing Press
Disintegrators, Clay
Dies and Moulds
Dryers
Engines
Filter Presses
Fret Grinder
Friction Clutches
Generators
Gears
Grinders, Surface or Sand
Grates, Shaking
Heaters
Hangers
Jiggers
Kiln, Iron
Lathes
Mixing and Washing Outfits
Moulds
Pans, Wet and Dry
Pillow Blocks
Polishing or Buffing Wheels
Presses, Screw
Press, Sagger
Presses, Tile
Pugging Machines
Pumps
Pulverizers
Slip Houses
Sifter or Lawn
Stoves, Steam
Sheaves
Sole Plates
Tanks
Valves
Vulcanizers
Washing Machines
Wad Machines
Whirlers